

UNITED STATES BUREAU OF EDUCATION  
BULLETIN, 1914, NO. 23 . . . . . WHOLE NUMBER 596

---

## SOME TRADE SCHOOLS IN EUROPE

By FRANK L. GLYNN

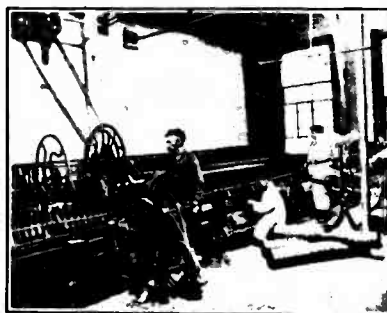
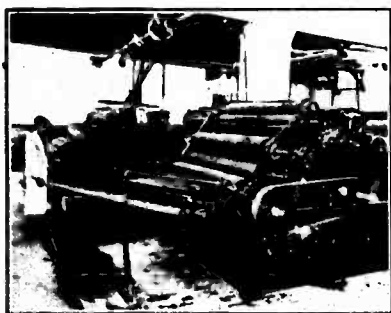
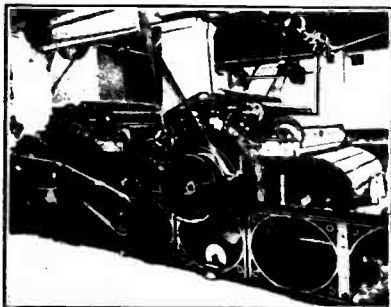
DIRECTOR OF TRADE INSTRUCTION OF THE PUBLIC SCHOOLS  
OF NEW HAVEN, CONNECTICUT



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1914

BUREAU OF EDUCATION

BULLETIN, 1914, NO. 23 PLATE 1



WEAVING SHOPS, ARTANE INDUSTRIAL SCHOOL OF TRADES, ARTANE, IRELAND

ADDITIONAL COPIES  
OF THIS PUBLICATION MAY BE PROCURED FROM  
THE SUPERINTENDENT OF DOCUMENTS  
GOVERNMENT PRINTING OFFICE  
WASHINGTON, D. C.  
AT  
15 CENTS PER COPY

▽

205568  
AUG 28 1916

IK 33

DA 3

B

1914

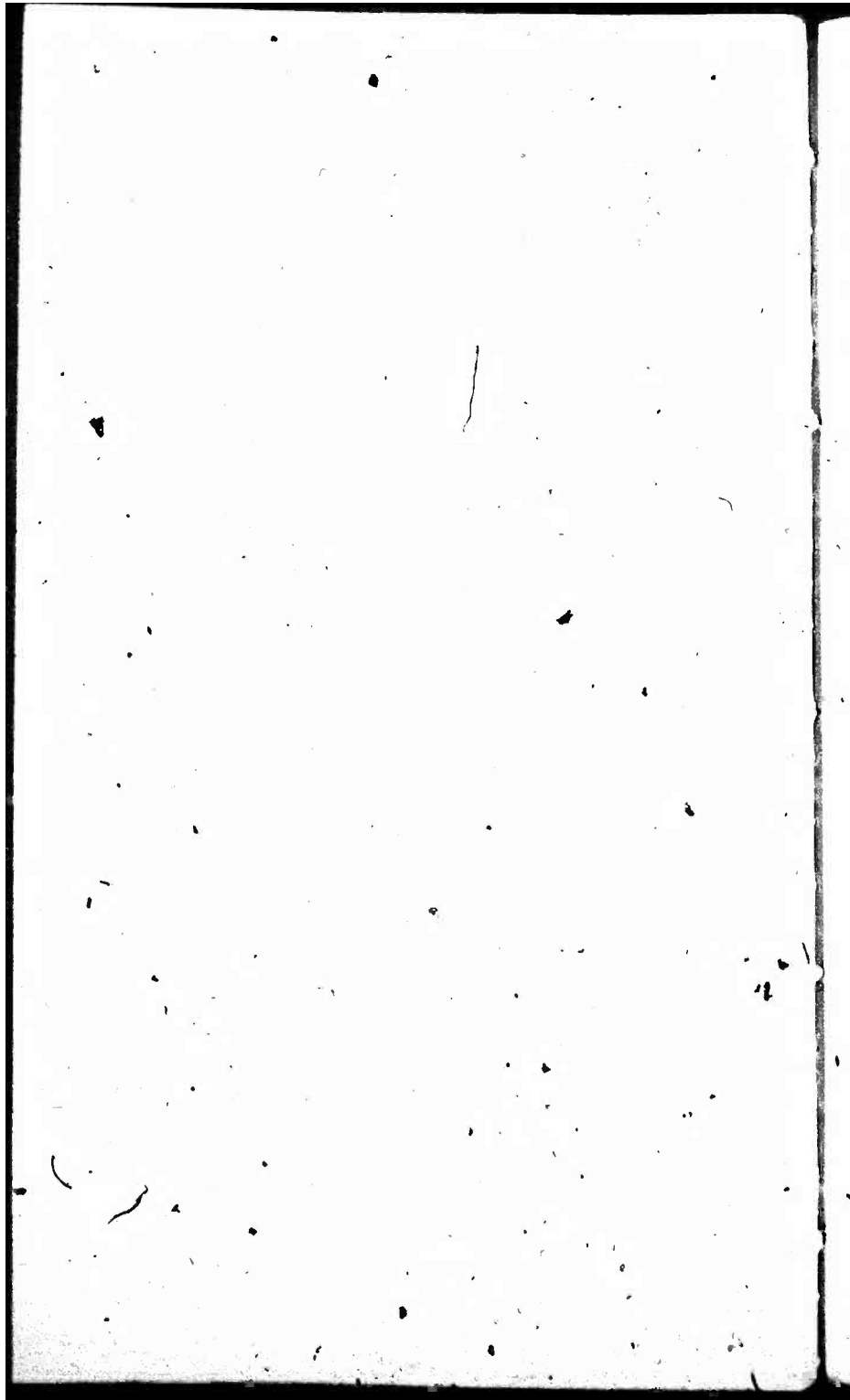
23-33

## CONTENTS.

	Page.
Letter of transmittal.....	7
Introduction.....	9
I. GREAT BRITAIN AND IRELAND:	
The Artane Industrial School of Trades, Dublin, Ireland.....	10
The Municipal Technical Institute, Belfast, Ireland.....	14
Day Trade Preparatory School, Liverpool, England.....	20
The Westminster Technical Institute, London, England.....	21
The Polytechnic Annex, Westminster, London, England.....	23
The London County Council Central School of Arts and Crafts, London, England.....	25
Leather Seller's College, Bermondsey, London, England.....	27
The London County Council Trade School for Girls, Queen's Square, Bloomsbury, W. C., London, England.....	29
The London County Council Shoreditch Technical School, London, England.....	32
Leather Trade School, Bethnal Green Road, London, England.....	36
The Nautical School, Liverpool, England.....	38
II. FRANCE:	
École Professionnelle Ménagère for Girls, Paris.....	40
École Boulle, Paris.....	41
Bernard Palissy School, Paris.....	42
École Municipale Professionnelle, Paris.....	43
National School of Watchmaking, Cluses.....	45
III. GERMANY:	
Trade education in Germany.....	46
Apprenticeship in Germany.....	49
The Central Labor Exchange, Berlin.....	52
The Hand Workers' Trade School, Augsburg.....	55
IV. AUSTRIA:	
Continuation School, Vienna.....	56
V. BELGIUM:	
École Professionnelle de Mécanique, Liege.....	57
Gunmakers' School, Liege.....	59
École Professionnelle des Femmes, Brussels.....	60
École Professionnelle de Menuiserie, Liege.....	61
École Industrielle, Brussels.....	62
VI. SWITZERLAND:	
Metal Workers' School, Winterthur.....	63
VII. ITALY:	
Casanova Institute, Naples.....	66
APPENDICES:	
A. London & Northwestern Railway (apprentices).....	67
B. A German apprentice contract.....	69
C. Apprentice training and factory schools.....	72

## ILLUSTRATIONS.

	Page.
Plate 1. Weaving shops, Artane Industrial School of Trades, Artane, Ireland.....	Frontispiece
2. A, Laundry and kitchen views, Industrial Schools, Ireland; B, The Shoreditch Technical School, London, England.....	16
3. A, Municipal Technical Institute, Belfast, Ireland; B, The village of Cluses, France, where is located the National School of Watchmaking.....	16
4. A, National School of Watchmaking, Cluses, France; B, Main street of Cluses; watch factory on the right.....	32
5. Trade School for Girls, Bloomsbury, England.....	32
6. German Continuation School for smiths, machinists, laundry workers, harness makers, barbers, and gardeners.....	48
7. Features of the German Continuation School.....	48
8. A, German Continuation School for the Tailors; B School for butchers at slaughter house; C, Entrance to a continuation school; D, Apprentice instruction rooms in separate factory, Berlin, Germany.....	56
9. Building, laboratories, and science apparatus for technical instruction in the German system.....	56
10. Central Labor Exchange, Berlin, Germany.....	64



## LETTER OF TRANSMITTAL

DEPARTMENT OF THE INTERIOR,  
BUREAU OF EDUCATION.

*Washington, D. C., November 1, 1913.*

SIR: Several European countries have, for many years, been working toward the solution of the problem of vocational education and the trade schools, each country in its own way, and many of them have made more progress in this matter than have we here in America. We know more about this type of education and this kind of school in Germany than elsewhere, and there is a marked tendency in the United States to adopt German plans and methods, but it is quite certain that we might gain profitable lessons from other countries as well. For this reason, when I learned last summer that Mr. Frank L. Glynn, then director of the State Trade School at Bridgeport, Conn., now the director of trade instruction in the schools of New Haven, Conn., was going abroad to inspect trade schools in Great Britain, France, Germany, and some other countries, I requested him to prepare for this Bureau a brief analytical report on a few of the most important schools visited in each of these countries. The manuscript transmitted herewith contains a report on two dozen of the schools visited in Ireland, Scotland, England, France, Belgium, and Germany, with a brief account of apprenticeship systems and a translation of some valuable documents on different phases of the general subject. In this report Mr. Glynn has made no attempt to theorize about the schools or their methods. Following my suggestion, he has presented their most important features as clearly and briefly as possible, so that others may see them through his eyes unobscured and unbiased by any attempt at interpretation. I recommend that this manuscript be published as a bulletin of the Bureau of Education.

Respectfully submitted.

P. P. CLAXTON,  
*Commissioner.*

The SECRETARY OF THE INTERIOR.

## SOME TRADE SCHOOLS IN EUROPE.

### INTRODUCTION.

#### GENERAL ORGANIZATION.

In general the trade-school situation in Europe may be summed up very briefly:

In *Great Britain* and *Ireland* we find both public and sectarian institutions, representing the all-day apprentice or trade school, the continuation school, and the evening instruction courses offered to men, women, boys, and girls. The system, however, is comparatively recent in its development, having been built upon the experiences of the continental countries.

In *France* we find the all-day trade school in its highest development, with special schools established for both boys and girls. The aim of these schools is to intensify the idea of artistic expression as well as to improve mechanical construction and efficiency in production.

In *Germany* and *Austria* we find the continuation school, with a beginning of the all-day trade school in both countries.

*Belgium*, *Holland*, and *Switzerland* seem to have developed a combination of the French and German systems, including in their plan the all-day trade school with apprenticeship as well as the continuation school for apprentices and tradesmen.

In *Italy* the day trade school only is found, with greater emphasis on the artistic side—sculpture, painting, jewelry, gold and silver smithing—than on ordinary manufacture. In this respect northern Italy differs greatly from the portion south of Florence, considerable manufacturing having been introduced.

#### TEACHERS.

Teachers are divided generally into technical academic men and journeyman tradesmen. The former are required to have trade experience as well as technical experience; the latter are expected only to have completed their apprenticeship and to have served a period of time in the trade. The salaries are much lower than those paid in America, being conditioned chiefly by the supply and the lower cost of living. The time of teaching varies from 25 hours a week to regular trade time in shop instruction; academic teachers do not exceed 30 hours, while shop men teach continuously for the full trade week.



## CONTROL.

In general the schools are established and operated by the cities under State aid and State control. More often this control is regulated by the bureau of labor or industry rather than by the academic educational department. The endeavor is constantly to maintain a regular factory or shop condition in the trade instruction and an industrial relation to all academic branches.

## APPRENTICESHIP.

Apprenticeship is very highly developed in northern Germany; the other countries have practically lost it. They are now facing a condition of revival and are developing the all-day trade school to a greater extent.

## I. GREAT BRITAIN AND IRELAND.

## THE ARTANE INDUSTRIAL SCHOOL OF TRADES,

Dublin, Ireland.

About an hour's pleasant drive from Dublin, on the Malahide Road, is the Artane Industrial School for boys. This is a completely self-contained institution and represents a distinct type.

The students have for the most part been committed to this school on account of destitution, want of proper guardianship, or other similar causes. It is by no means a reformatory, but, however, comes in between that and the usual school. No boy who has committed a crime is permitted to attend.

Throughout Ireland this type of school is strictly denominational. There are 21 schools for boys, 46 for girls, and 1 coeducational. Of these, 18 are for Catholic boys and 3 for Protestant boys; 43 for Catholic girls and 3 for Protestant girls. The mixed school, located in Killarney, is for Catholic girls and very young Catholic boys.

The school of Artane was started by the Rev. Brother T. A. Hoope. He began his work in a modest dwelling house and a dilapidated farmyard, providing for some 70 distressed boys of the city and county of Dublin, and developed it until the buildings, as they now exist, cost over £60,000. Improvements are constantly effected through the generosity of the many friends of the school.

In order to carry out more effectively the intention of the industrial school act, 56 acres of land were purchased for £7,000. In the beginning the training was limited to agricultural pursuits, but gradually various trades were introduced and the boys allowed to select the occupations which they preferred.

The institution represents three distinct organizations: (1) The home; (2) the school; (3) the trade.

The "home" consists of the dormitories, the playgrounds, the bathhouses, the kitchens, and the mess hall.

The "school" consists of at least three hours a day academic training in the regular standard academic studies of reading, writing, spelling, arithmetic, history, geography, business conditions, and drawing. These are kept separate from the trade interests and pursuits and are studied from the purely academic or abstract point of view, without regard to the relation they may bear to the occupation of the boy.

The "trade" means that the boy becomes engaged in his chosen trade pursuit and must be employed in it independent of all other work for not less than six hours a day under the conditions prevailing in the school.

The boys are tremendously interested, owing greatly to the personnel of the teaching force and the executive staff, who seem to take very kindly to each boy and encourage him to persevere at whatever he undertakes.

There are other industrial schools in Ireland conducted by the Christian Brothers as follows: Galway, 200 boys; Limerick, 170 boys; Carriglea, Monkstown, County Dublin, 150 boys; Letterfrack, 150 boys; Tralee, 100 boys.

Special announcements concerning these schools may be obtained by writing to these various cities.

The Artane school represents what is usually termed the "all-day" trade school. There are 12 workshops, each equipped and operated under actual factory conditions. The product is of a commercial nature and is judged by trade standards; it is sold in the market at market prices, and the proceeds are turned back into the cost of maintenance of the school.

The courses are as follows:

	Students.
1. Cabinet making.....	14
2. Painting and decorating.....	10
3. House carpenters.....	12
4. Weaving <sup>1</sup> .....	8
5. Cart and wheel wrights.....	12
6. Tinsmiths.....	12
7. Tailoring.....	60
8. Machine work: Fitting, iron turning, wire working.....	8
9. Boot and shoe making.....	50
10. Flour milling and bakery.....	10
11. Harness making.....	12
12. Forging.....	10
13. Agricultural training.....	80
14. Gardening.....	12

<sup>1</sup> This is in itself a complete textile factory. It is fully equipped with regular factory machinery and turns out a marketable product.



In each of these trades the teaching is done by a competent foreman from the trade, and the work is productive. In addition to this, the principle of "why" as well as "how" is studied in each of the processes of the trade, and a thorough analysis of the material and equipment is made before the completion of the course.

Besides these trade shops there is also a juvenile department, which is very similar in its nature to what we call in America "prevocational." This enables the boys to select their occupation more wisely, through previous personal contact with a variety of work.

As already noted, the school is a separate institution and comprises 11 rooms, each in charge of a special teacher and equipped in a thoroughly modern way, as are also the trade shops.

The manual instruction is educational in its purpose, however, the technical skill being acquired as an outcome of the activity. The primary idea is character-building, based on intellectual and moral training.

The school is maintained largely through philanthropy, although the department is under the control of the Board of Agricultural and Technical Instruction in Ireland, which holds an annual examination.

Further than the trade training, special attention is given to athletics, military drill, dramatic productions, and the study of music. The physical instruction is mainly for a better and stronger physique; the dramatics for a broader and more liberal background; and the musical instruction takes on almost a vocational aspect in the school band, the drum corps, and the orchestra. Experts in this line are engaged, and the boys are completely equipped with the necessary instruments, from the finest of pianos to the snare drum.

The infirmary, under the direction of a special medical attendant, stands apart from the main buildings, a separate unit in itself and equipped with the most modern facilities. The brother in charge, while showing me through this department, remarked:

It is the only place in the whole plant which is idle; for none of our little fellows are ever ill, being here only on account of accident. They are so happy in their everyday activities that they would rather be out with the rest of their comrades.

In the dining hall we find simple and ample accommodations. There are 40 tables, each providing for 20 boys. The tablecloths are woven in the textile department. The food is raised by the boy farmers and cooked in the school kitchen by boys learning to be cooks. The laundry work is done in the laundry department, where boys are learning that trade. The cattle are kept by the boy dairy-men and are cut up by the boy butchers. The hides are tanned outside and returned to the school, where the shoemakers and harness makers utilize them in their trades. The horses are cared for by the boys learning to become teamsters. The boy gardeners have a special experimental plot covering about an acre, where they raise on about

150 different sections all sorts of roots, forage, and cereal crops, treated in various ways.

Special study is given to botany; seeds are tested in various ways; and experiments are carried out with the idea of discovering the best cropper and the best disease resister.

The boys further study the thermometer, lactometer, creamometer, sterilizer, experimental churns, varieties of grass and seeds, fertilizers, and the elements of organic and inorganic plant life.

They must also learn very thoroughly about the different diseases of cattle and the kinds of simple medicine for them.

In the dining hall is shown a most effective method of history teaching. The walls are very finely decorated with paintings of the historical scenes of Artane, Killarney, and Kerry, of the famous castles and abbeys, and of the men who were prominent in Irish history. Special attention is given to the study of these paintings, and they were placed in the dining hall for the purpose of "giving the boys something of a liberalizing and elevating influence in their surroundings, which would point toward a greater and deeper appreciation of their country's experiences."

Another very important line of training offered at this school consists of poultry raising. The poultry farm is about 4 acres in extent and contains hundreds of fowls, ducks, geese, and turkeys. The plan was designed by one of the most enterprising and well-known poultry firms in the country. They were pioneers of the industry in Ireland, and up to the present have absorbed practically the greater part of the trade. The boys are taught by practical men, under practical conditions; and the most ideal kind of a poultry farm is provided for their training.

The following are the "entrance requirements" of this school upon which a lawful order of detention can be made:

SEC. 11. Any person may bring before two justices any child apparently under the age of 14 that comes within any of the following descriptions:

1. A child found begging or receiving alms.
2. A child being in any street or public place for the purpose of begging or receiving alms.
3. A child found wandering and not having any home.
4. A child found wandering and not having any settled place of abode.
5. A child found wandering and not having proper guardianship.
6. A child found wandering and not having visible means of sustenance.
7. A child found destitute and being an orphan without any parent.
8. A child found destitute and having a surviving parent who is undergoing penal servitude or imprisonment.
9. A child who frequents the company of reputed thieves.

A normal child is denied the privilege and opportunity of a good education of this sort, while the committed child may graduate any day in the year equipped and provided with a remunerative occupation and position.



### THE MUNICIPAL TECHNICAL INSTITUTE,

Belfast, Ireland.

The Municipal Technical Institute was established in Belfast under the agricultural and technical instruction act of Parliament, 1899. The actual establishment was executed by the Belfast corporation in 1901, the institute being located there on account of the general industrial needs of the city, which has become a large industrial center.

The total annual monetary provision for the entire maintenance of this school amounts to £30,000, and is obtained from city rates, student fees, the Department of Agricultural and Technical Instruction of Ireland, the National Board of Education, and miscellaneous sales of books and material to students.

The following table may be of interest as showing the approximate relations of these amounts:

*Sources of annual income of Belfast Municipal Technical Institute.*

Sources.	How raised.	Annual amount.
City rates.....	1 penny to the pound.....	£24,000
Students' fees.....		2,600
Department of Agricultural and Technical Instruction.....	Taxes.....	19,000
National Board of Education.....	do.....	200
Miscellaneous.....		1,700

Immediately upon the passing of the act of 1899 the corporation appointed a committee called the library and technical instruction committee to prepare a plan of instruction and facilities. Two consultative committees were also formed, one composed of the leading merchants and business men of the city, the other of representatives of the various local educational establishments of all grades, the former including manufacturers as well as commercial men.

The result of several conferences of the committees and the corporation was that the various existing institutions having evening instruction and other departments were consolidated and combined into one building which was erected and occupied in 1904. The actual organization was perfected in 1901; students and teachers were obtained; and courses were opened in temporary quarters, which were rented in various parts of the city, awaiting the final completion of the building.

The institute opened for its first session September 30, 1901. Within the first month more than 2,000 entries were received from students. At the end of the first session, in July, 1902, there were 3,000 students enrolled, and at present there are 6,150 students, divided as follows: (1) Day trade preparatory school, 150 students; (2) night school, 5,500 students; (3) continuation school, 500 students.

## TRADE PREPARATORY SCHOOL.

*Courses.*—In 1903 it was found necessary to establish a school which would provide preparatory courses of day instruction for boys who had completed the regular national school and wished ultimately to enter some trade or industry. It can be said without hesitation that no branch of expenditures for technical instruction has yielded more satisfaction to the technical instruction committee than these courses.

Applicants for admission must not be less than 12 years of age, and they must have been enrolled in the sixth standard of a national school for at least 12 months or have attained an equivalent educational standard. Only candidates who are successful in passing the entrance examination can be admitted to the school. This examination is in arithmetic, English, and drawing.

The first year of school training covers the following subjects:

Mathematics (arithmetic, algebra, experimental geometry); English (grammar, literature, commercial geography, history); experimental science (physics, mechanics); manual instruction—woodwork (the preparation of working drawings, full size, or to scale; description and use of woodworking tools; simple exercises in sawing, planing, chiseling, making simple joints and simple models); German; drawing (freehand, model); physical training (physical drill).

The second year:

Mathematics (pure mathematics, logarithms, algebra, geometry, trigonometry, practical mathematics); English (grammar, composition, literature, history, commercial geography); physics; chemistry; practical geometry; mechanics; manual instruction—woodwork; German; art (geometrical drawing, plant drawing); physical training.

The third year:

Mathematics (pure mathematics, geometry, practical mathematics); English (composition, grammar, literature, British history, commercial geography); physics (heat, light, sound, magnetism, static electricity, voltaic electricity); mechanics; mechanical laboratory; practical geometry; machine drawing; manual training; German; art; physical training.

The number of hours per week allotted to each subject of instruction is as follows:

*Hours of instruction per week, by subjects.*

Subjects.	Years.		
	First.	Second.	Third.
Mathematics:			
Algebra, etc.	4	5	5
Experimental geometry	1		
English:			
Grammar, literature, etc.	5	3	
Geography and history	1	2	4
Experimental science:			
Physics	6	3	2
Chemistry		4	
Magnetism and electricity			

*Hours of instruction per week, by subjects—Continued.*

Subjects.	Years.		
	First.	Second.	Third.
Mechanical science:			
Practical geometry.....		2	3
Machine drawing.....		2	5
Mechanics.....		2	
Mechanical laboratory.....	14		
Manual instruction:			
Wood work.....	4½	2	
Metal work.....		2	3
Modern language (German).....	3	2	3
Art (freehand, model drawing, etc.).....	3	2	1
Physical training.....	1	1	1
Total.....	30	30	30

Home work is given daily and is so regulated as to occupy approximately one hour and a half each evening.

*Fees and books.*—The fee to pupils who pass the entrance examination but who are unsuccessful in obtaining scholarships is 6 pence per week, payable weekly. Parents who wish to do so may pay a sum of £1 in advance to cover the year's instruction. Nonscholarship pupils are required to provide themselves at the opening of the session with the books and instruments required for their school work, the cost of these for the first year's course being approximately £1 3s. Textbooks must be purchased by students.

*Product.*—Although considerable time is given to manual instruction or shopwork in the trades covered, nothing is produced for sale, all production being based on model or exercise work.

*Building.*—The building was erected out of a local Government board loan, which is repayable by annual installments to be spread over a period of 50 years. The total floor space covers 150,000 square feet, and is divided as follows:

	Square feet.
Administrative department.....	2, 266
Mathematics department.....	2, 172
Mechanical engineering and naval architecture.....	13, 979
Physics and electrical engineering.....	9, 483
Architecture and building trades.....	4, 773
Textile industries.....	16, 174
Pure and applied chemistry.....	9, 313
Commercial and modern languages.....	5, 894
Women's work.....	3, 307
Miscellaneous trades and industries.....	6, 125
Art.....	15, 437
Library and reading room.....	1, 278
Central hall.....	3, 225
Rooms for boilers and for ventilating and heating plant.....	1, 379
Storerooms, lavatories, lifts, etc.....	9, 445
Vestibule, corridors, stair spaces, etc.....	29, 612
Total area.....	133, 862

BUREAU OF EDUCATION

BULLETIN, 1914, NO. 23 PLATE 2



I. LAUNDRY AND KITCHEN VIEWS. INDUSTRIAL SCHOOLS. IRELAND.

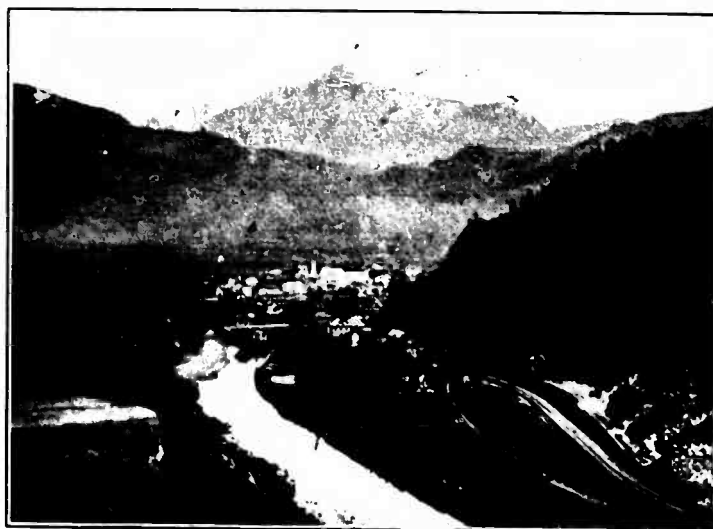


B. THE SHOREDITCH TECHNICAL SCHOOL. LONDON, ENGLAND.





A. MUNICIPAL TECHNICAL INSTITUTE, BELFAST, IRELAND.



II. THE VILLAGE OF CLUSES, FRANCE, WHERE IS LOCATED THE NATIONAL SCHOOL OF WATCHMAKING.

The maximum number of students present at any one time is between 1,800 and 2,000, while the total enrollment at present equals 6,650.

*Equipment.*—The entire equipment is of trade standards. Originally the corporation set aside a sum of £40,000 for this purpose, divided among the departments in proportion to their importance and requirements, as follows:

	Sum allotted.
Mathematics department.....	£500
Mechanical engineering.....	9,000
Physics and electrical engineering.....	8,000
Naval architecture.....	700
Architecture and building.....	1,300
Sanitary engineering.....	1,000
Textile industries.....	5,000
Pure and applied chemistry.....	2,500
Typography and lithography.....	700
Miscellaneous trades and industries.....	2,000
Natural science.....	700
Commerce (including modern languages).....	1,100
Women's work.....	1,000
Art.....	1,200
Miscellaneous.....	5,300
Total.....	40,000

*Women's department.*—An interesting department of the school is that for women. The object of this department is to promote efficiency in home making. The department is completely equipped with all the necessary appliances for demonstration rooms, practice kitchens, laundries, and sewing rooms. The work is divided into (1) term classes and (2) course classes. (1) Term classes meet once a week during a period of from 11 to 14 weeks. A student may join for a single subject or for any number of subjects. (2) In course classes the student must follow a regular course of instruction extending over two or more terms, entering upon examination.

Subjects covered are as follows:

*Subjects and stages of instruction in women's department.*

Subjects.	Stage.
Cookery.....	Ia. Elementary cookery. Ib. Simple dinners. IIa. Household cookery. IIb. A course of dinners. IIIa. Superior household cookery. IIIb. Cake-making, confectionery, and icing. IV. High-class cookery.
Laundry work.....	I. Plain laundry work. II. Advanced laundry work.
Housewifery.....	I. Housekeeping lectures. II. Practical housewifery.
Home nursing.....	I. Lectures in hygiene. II. Sick nursing. III. Ambulance.
Plain needlework.....	I. Cutting out and making up knickers and camisoles; patching and darning. II. Cutting out and making undergarments; dressing jackets and undershirts.

*Subjects and stages of instruction in women's department—Continued.*

Subjects.	Stage.
Children's clothing.....	I. Making children's simple clothing. II. Making children's clothing.
Blouse making.....	I. Simple blouses, slip, bows. II. Fancy blouses and wash underskirt or unlined skirt. III. Fancy blouses, unlined wash dresses, bows, belts.
Drafting.....	I. Simple garments. II. Coats and advanced garments.
Skirtmaking.....	I. Making of cloth skirt and knickers.
Dressmaking.....	I. Making of dress skirt and bodice. II. House or walking dress. III. Coat and skirt. IV. As students choose.
Millinery.....	I. Renovations; making and covering buckram shape or covering bought wire shape; trimming. II. Making, covering, and trimming wire shapes. III. As students choose.
Hat renovations (work-room class).	I. Ripping, remaking, cleaning, and dyeing straw hats.

The books used for reference are as follows:

**Cookery:**

- The New Century Cookery Book, by Herman Senn.
- The Wright Cookery Book, by Allison Wright.
- Soyer's Paper Bag Cookery, by Nicholas Soyer.
- The School Cookery Book, by Cathrie Wright.
- Polytechnic Cookery Book, by M. M. Mitchell, M. C. A.
- Housewives' Manual of Domestic Cookery, by H. M. Young.
- French Cookery for English Homes, published by Blackwood & Co.

**Laundry work:**

- The Art of Laundry Work, by Florence B. Jack.
- The Science of Laundry Work, by Margaret C. Rankin.

**Housewifery:**

- Household Work and Management, by Annie Butterworth.
- The Woman's Book, by Florence B. Jack.

**Plain needlework:**

- Needlework for Student Teachers, by Amy K. Smith.
- Needlecraft, by M. Swanson and M. Macbeth.
- Cutting out of Undergarments for Adults, by Bertha Banner.
- Cutting out of Infants' and Children's Garments, by Bertha Banner.

**Dressmaking:**

- Dresscutting, by H. M. Ashworth.
- Dresscutting, by H. M. Ashworth and P. Balmforth.
- Practical Dressmaking, by J. Broughton.

**Millinery:**

- Practical Home Millinery, by Amy J. Reeve.

Special outlines of work as covered in each department may be obtained by writing to the school and asking for the "Programme of Women's Work." It is very exhaustive and thorough, and would be of inestimable value to one seeking information.

*Technical course.*—The institute also includes a day technical course, to provide instruction in the science and technology of mechanical engineering, electrical engineering, the textile industries, and pure and applied chemistry, the course being of a nature similar to that of our American engineering colleges. Further discussion of it will be eliminated from this report.

In connection with this course, however, there is established a cooperative course in engineering with the Queen's University of Belfast by which students in the university may follow a part of the course of study in the technical institute in order to obtain their degree in engineering or textile technology.

#### CONTINUATION SCHOOL.

Courses are also provided in the day department for apprentices employed in the trades. The following outline of day courses for printing trades apprentices is typical of the other departments:

1. The apprentices who are permitted to attend must first be nominated by their employers.
2. Instruction is given in (a) English, (b) Applied mathematics, (c) Theory and practice of the trade.
3. The equipment consists of the latest devices and facilities in each trade.
4. The class in printing meets on Tuesday from 2.30 p. m. to 6.30 p. m., commencing October 1, 1912.
5. Home work is given in each department. This consists of general technical studies or mathematics.
6. Employers are kept in intimate contact with the progress of the apprentices.
7. Examinations are held and certificates awarded at the end of each course.
8. The training covers the use of the linotype machine and press work, composition, etc., with the purpose of giving the boy in the trade an opportunity and a broad all-round training so far as is possible in 4 hours a week. The shop work is entirely based on exercise trade operations or model work. No idea of production is considered.

#### NIGHT SCHOOL.

Evening instruction is designed for the education of artisans employed in the trade during the day, and consists of both technical and practical work. It is entirely limited to those employed in the trade. Each evening course calls for attendance 2 hours each evening, from 7.30 to 9.30, and is open from two to three evenings a week, September to March, to men and women employed in the daytime.

The graphic arts department of the evening school covers the following instruction: Typography, linotype, letterpress machine work, designing for lithography, lithographic printing, bookbinding—forwarding and finishing.

A brief outline of the work covered in some departments follows herewith:

##### Baking trades:

- Bread-baking—ordinary grade—lectures, practical work.
- Breadmaking—honors grade—lectures, practical work.
- Cake ornamentation for bakers—beginners—practical work.
- Confectionery for bakers.—Demonstrations and practical work; lectures on the different materials used by confectioners.

##### Tailoring trades:

- Tailors' cutting—men's garments; beginners' class.
- Tailors' cutting—men's garments; advanced class.

The courses for women are along lines similar to those previously mentioned, the organization of the women's evening department being the same as that for the men.

The evening and the continuation courses of the institute are designed solely to improve those employed in the trade and deal entirely with the productive work on an exercise basis, allowing only 4 hours a week to trade-practice instruction and related academic studies.

Investigation of the trades impresses one thoroughly not only with the decline but with the absolute loss of the old apprenticeship, which in Germany is preserved and maintained as a separate organization; so that, being related with the continuation instruction, the school training in Germany becomes supplementary, provides a background of educational thought, and gives rise to greater efficiency in the analysis and application of trade processes in production—processes learned through the actual apprenticeship in the factory. The Belfast system seems on this account to be onesided, having only the academic training with some slight shop training. The weakness is in the trade organization itself.

### DAY TRADE PREPARATORY SCHOOL,

Liverpool, England.

The Day Trade Preparatory School is a comparatively new feature in the industrial educational system of Great Britain. It is developing largely and has become very important in Liverpool, Manchester, and Edinburgh. The school at Liverpool may be taken as an excellent illustration.

Its purpose is to provide a practical education for boys who have already received a primary education, and are preparing to become at the age of 15 and 16 years apprentices in the mechanical, electrical, sheet-metal, carpentry, joinery, building, or other trades.

The course of instruction is designed so to prepare the boys that immediately upon entering the workshop they will be able to take up useful work; it thus saves much valuable time to both themselves and their employers during the earlier years of their apprenticeship.

The teachers consist primarily of practical men of workshop experience as well as of experience in teaching.

The entrance requirements are as follows:

Each student admitted must (1) be not less than 13 years of age at the date of admission; (2) pass the entrance examination in arithmetic, drawing, and English about the equivalent of the seventh grade; (3) produce a statement from his parents that it is their intention to keep him in the school for the full course, and then for him to enter some trade or industrial occupation.



The school is open Monday through Friday from 9 a. m. to 12 and from 1.30 to 4 p. m. The school year begins in the third week in August and is arranged in three terms of about 14 weeks each, with 3 weeks' holiday at Christmas, 1 week at Easter, and 6 weeks in the summer, the course covering a period of two years.

*Instruction.*—The subjects of instruction are as follows:

Workshop practice in wood and metal—an average of eight hours per week, other time being spent in academic training.

Practical mathematics, including the application of arithmetic, mensuration, algebra, logarithms, and trigonometry to workshop problems.

Practical drawing of machinery, building, and other details, including constructive and solid geometry.

Free-hand drawing, sketching of objects and models.

Elementary science, with practical laboratory work in chemistry, mechanics, and physics.

English, including reading, composition, and geography.

Physical exercise.

*Fees.*—The fee for admission<sup>1</sup> is 15 shillings per term, payable in advance at the school. In extreme cases a payment of 5 shillings in advance at the beginning of the term is accepted, followed by 13 weekly payments of 1 shilling. This covers the cost of apparatus, tools, material, books, and stationery for use in shop practice; but pupils are required to purchase the textbooks and stationery which may be needed for home work.

*Scholarships.*—Fifteen entrance scholarships giving free admission to the school for one year are offered by the educational committee on the results of an entrance examination. These scholarships are open to boys who have been students in the public elementary day schools not less than two years, provided they are nominated as suitable candidates by the head teachers of the schools they attended. On the result of the first year's work 10 scholarships are awarded for the second year.

In general the production in these shops is either of an exercise or a model nature; no commercial work is done.

## THE WESTMINSTER TECHNICAL INSTITUTE,

London, England.

The Westminster Technical Institute is located on Vincent Square. It was founded in 1890 by private enterprise, and was presented to the London County Council as a public educational institution in 1900.

The school represents a unique experiment for training boys as chefs and waiters.

<sup>1</sup> A higher additional fee is charged for students whose parents are neither residents nor taxpayers in the city.

The annual monetary provision is £7,000, raised by tax, fees, and commercial receipts from the sale of the product.

The courses offered cover trade training in cookery and waiter service for boys by day, evening school, and continuation school. The last covers a period of four years, varying from 4½ to 9 hours a week. The first and second year apprentices attend during the day and are paid while at school; the third and fourth years they attend the evening department. The training consists of shop practice on exercise work, applied mathematics, drawing, and English related to the trade.

This school is open to apprentices in various trades during the period of their apprenticeship. One very interesting feature of the continuation training is extension work for domestic servants in cookery. For some domestics this extension work consists of attendance at school on the regular 6 to 9 hour a week basis; opportunity is also granted others to attend various full periods of time—3 months, 4 months, 5 months, or whatever period is adapted to their special condition.

The evening school follows practically the regular lines, and the subjects are conditioned by the trades of that locality. The studies are specialized to meet the demands of the students, and are related as closely as possible to the trade followed during the day.

Courses are offered 3 nights a week and 2 hours each night.

The unusual feature consists of the day training, which is arranged as follows:

(a) The course for chefs—7 hours a day, 5 days a week, 42 weeks a year—covering a period of 3 years.

(b) The course for waiters—7½ hours a day, 5 days a week, 42 weeks a year—covering a period of 1 year.

The cooking is carried on by the boy chefs under actual trade conditions with a trade man as teacher. The boys are garbed in the regular cap and coat worn by the trade, and the product is turned over for sale in the restaurant of the school, where the boy waiters learn their trade through actual service. Tables are arranged so that from 2 to 10 persons may be seated at different ones. Menu cards are printed, and the food is sold at the cost of material plus the additional cost for preparation. The restaurant is mainly confined to students in the other departments of the institute, where a variety of courses are studied, but it is also open to the general public. When this department was first established the regular hotel and restaurant men in the city made vigorous objection, but after thoroughly investigating it in the light of the need for trained waiters they not only found themselves thoroughly in accord with the development of the project, but they became enthusiastic supporters of it.

Boys are admitted to this school between 14 and 16 years of age. They receive general instruction as well as technical training. The studies covered in the general instruction are: English, 3 hours a week; French, 7 hours a week; arithmetic, 3 hours a week; physical exercise, 2 hours a week.

The remainder of the time is given to actual practice, the proportion being about 40 per cent to theory and 60 per cent to practice. The instructor, a professional waiter, like the chef instructor in cooking, is allowed to increase his earnings by work in the trade on the outside.

A fee of 9 guineas a year is charged for the cooking course and 6 guineas for the waiters' training. The general policy of the school is under the direction of a consultative committee which is appointed by the general London County Council, the members representing the trades taught.

#### THE POLYTECHNIC ANNEX,

Westminster, London, England.

The Polytechnic Annex represents in part the day trade school. It is an extension of the Royal Polytechnic, being housed in temporary quarters on account of lack of floor space in the larger building.

The trades taught consist of tailoring and carriage building, the former being very important and the latter being entirely negligible.

The local condition of the tailors' trade had become so depleted that it was found necessary to establish and maintain this school in which boys were paid a working wage scale so as to make the training attractive. It was found that the British tailor was going out of existence because of the decline of the apprenticeship and that the schools were educating boys away from the trades. The ranks of the British tailors were rapidly being filled by foreigners, many of whom obtained their training in trade instruction departments. Fearing the absorption of the trade by the newcomers, the city provided against the future by establishing this school in, which about 30 boys are now studying 8 hours a day, 5½ days per week, and 48 weeks a year, during an apprenticeship of 4 years, and are taught by salaried workmen from the trade.

The trade unions are very much in favor of this school and promote it. The city has found it advisable to employ union men, and in their commercial production the union rates prevail. The unions are consulted and are represented on advisory committees.

This school is peculiar in its maintenance organization. A small fee is paid the head instructor who has charge of the department. The remainder of his salary and the entire salaries for his assistants are paid from the earnings of the apprentices. The latter are paid an apprenticeship wage scale from the school funds. The first year



they receive no wage scale; the second year, three shillings per week; the third year, five shillings sixpence; and the fourth year, ten shillings.

On entrance, however, the student must pay a premium of £5, but no further additional fees in this trade.

The production, as noted before, is rated on the regular union basis, the prices for which are edited in a printed pamphlet called "Time Log and Coats, Waistcoats, Trousers and Breeches Livery agreed to in 1891 by the Association of London Master Tailors and the Amalgamated Society of Tailors, with Additions and Corrections from 1891 to 1912"—a copy of which report may be obtained from the Association of London Master Tailors, 24-A Regent Street, London, S. W.

The prices represent the result of committee conferences of the masters and workmen, based on the different articles of wearing apparel. The commercial work in the school is contracted for on the basis of these prices, and the receipts are used in paying the salaries of the teachers. The danger of exploitation is considerable, but an effort is made to avoid this by having the head master come partly under the pay of the school and the entire department under school supervision.

The evening school is open for the following trades, with membership noted: Tailors, 115; carriage builders, 150; painters, 120.

Instruction in each trade is given 2 hours per night, from 7.30 to 9.30, 2, 3, or 4 evenings a week from 25 to 36 weeks a year, the length of the course depending upon the extent of training desired.

A special advisory board made up of masters and workmen, with representation of the London County Council, and numbering about 12 members, is in charge of the general organization of the school. Teachers are tradesmen, and their salaries depend on their earning efficiency in the trade.

The tailoring course is designed to cover the apprenticeship. The school has been operating, however, only since October, 1909, and has not created any apprentices up to this time. All connected with the school, however, both practical and theoretical men, are firmly convinced that the graduates will be far more efficient than those who go through the regular trade apprenticeship.

The entrance requirements for the tailoring school are that students are admitted at 14 to 18 years of age and can not enter the school for a shorter period than the full course of 4 years. The hours of attendance daily are 9 a. m. to 1 p. m. and 2 to 6 p. m.—except Saturday, only from 9 a. m. to 1 p. m.

The school is in session daily throughout the year, except the month of August, during which time vacations are held. In addition to this the annual holidays are also granted.

A course of study has been arranged, in addition to the actual shop training, which includes the following: Technical drawing, style designing, anthropometry (or man measurement), anatomy—applied to tailoring—garment cutting, general standard educational subjects.

Special series are published regarding this very interesting school, which stands as a unique institution in itself and is full of suggestion to persons who consider the establishment of similar departments.

### THE LONDON COUNTY COUNCIL CENTRAL SCHOOL OF ARTS AND CRAFTS,

London, England.

The Central School of Arts and Crafts, which was first opened in temporary quarters in Regent Street, 1896, was established by the London County Council to provide instruction bearing on the more artistic trades. In September, 1908, the school was transferred to the present building, erected by the council, at the junction of Southampton and Theobald's Road.

In general, the training is intended to supplement, rather than to supersede apprenticeship by affording to apprentices engaged in London art industries an opportunity for instruction in design and practice that can not possibly be obtained in the ordinary routine of a workshop.

In a general way the instruction covers the following main groups: Architecture and the building crafts; silversmiths' work and allied crafts; book production; cabinet work and furniture; drawing, design, and modeling; needlework; stained-glass, mosaic, and decorative work.

The annual appropriation is £8,220, raised as follows: London County Council, tax rate; board of education, grant; fees, nominal.

Apprenticeship in the locality exists only to a minor extent and in such trades as are organized. It extends over a period of seven years, and includes silversmithing, printing, bookbinding.

The entrance requirements are that students must be at least 13 years of age and admitted either on scholarship examinations in drawing and design or on recommendation of the elementary school.

The attitude generally of the people in the city is of a constructive nature, although labor unions are rather apathetic; employers take no initiative; parents are enthusiastic. The school organization is related to the other schools. The direction of the school comes under the London County Council, and is approved by the general board of education.

The attendance is as follows: Day school, 60 boys; night school, 1,310 (including men and women); continuation school, approximately

40 boys and girls. The school is open from Monday to Friday from 9.30 a. m. to 12.30 p. m. and from 1.30 to 4.30 p. m.

The length of the course covers 6 hours a day, 5 days a week, 42 weeks a year, extending over a period of 3 years, in each trade. During the second year pupils also work 3 hours extra Saturday morning.

The academic studies are related to the trade training and approximate the following percentages of actual shop time given above: First year, 60 per cent academic; second year, 50 per cent academic; third year, 40 per cent academic. The third year boys also attend one evening a week, and some voluntarily an additional evening. All students, however, take the same instruction in English and mathematics; the training in design and drawing is differentiated.

The direction of the school comes under a consultative committee of men engaged in the various crafts taught. The number varies with the trade, depending upon its extent. The members are appointed by the London County Council with representation of the manufacturing and labor interests, the council also being represented as the educational authority.

Fees are charged, payable in advance, to persons attending the school, except those under 21 years of age who are actually engaged in trades; these are admitted free on production of certificates from employers or upon showing copies of their indentures. Free admission is also extended to persons who are unemployed, during the period of their unemployment.

In general the fees for each term are as follows:

*Fees in Central School of Arts and Crafts, by terms.*

Classes.	Number of days a week.				
	1	2	3	4	5
General subjects, other than life.....	£ s. d. 0 15 0	£ s. d. 1 1 0	£ s. d. 1 8 0	£ s. d. 1 10 0	£ s. d. 1 13 0
Life, costume, or figure.....	1 11 6	2 13 0	(1)	(1)	.....

<sup>1</sup> £1 extra for each two days.

Evening school fees are arranged on the following basis: Persons employed in trades or occupations upon which the teaching of the school has a distinct bearing are admitted to all or any of the evening classes of the school which they are eligible to join on payment of fees at the following rates: (1) If earning over 30 shillings a week, 10 shillings a session; (2) if earning 30 shillings or less a week, 4 shillings 6-pence a session.

Persons not so employed may be admitted to the school on payment of 10 shillings 6 pence a term or a guinea the session; but students

below the age of 16 years, on furnishing satisfactory evidence that their work is of sufficient merit, may be admitted on payment of 4 shillings 6 pence for the session.

In the evening school the one fee admits to all the classes for which the student is eligible.

The products of the different departments in which the students are taught their trade processes are practical and of a finished nature. They are not marketed, however, but are mainly retained by the students as evidence of study and proficiency, being purchased by them for the cost of the material.

The investment in the building represents an expenditure of £63,600, which was approved by the finance committee of the London County Council and was raised by general tax. The land is valued at £45,000. The location of the building is very central, so as to be readily available to the greatest number of students. The floor space is 74,000 square feet, with a total capacity of 900 students at one time.

The following are general outlines, by trades, of instruction given:

*Printing and bookbinding:*

1. General English subjects and arithmetic.
2. French.
3. Typography and elements of languages.
4. Bookbinding and tool cutting.
5. Drawing and design.
6. Lettering and wood engraving.
7. Gymnastics.

*Silversmithing and jewelry work:*

1. General English subjects and arithmetic.
2. French.
3. Silversmithing practice.
4. Engraving.
5. Jewelry practice.
6. Drawing, design, and modeling.
7. Gymnastics.

As before stated, in the second and third years the student devotes himself either to bookbinding or typography on the craft side, according to the trade to which he is apprenticed.

### LEATHER SELLERS' COLLEGE,

Bermondsey, London, England.

Another unique school founded and supported by manufacturers is the Leather Sellers' College.

This school was established in Harold's Institute in 1895 by the Leather Sellers' Co. and was removed to its present enlarged and finely equipped building in August, 1909.



The equipment represents a complete leather manufacturing factory from the vats to the chemical laboratory, and all training is on commercial work. It is located in a district which is the center of leather manufacture and has a monetary provision of £3,500 a year from the following sources: (1) Leather Sellers' Co., (2) London County Council, (3) board of education.

In some branches of the trade there is an apprenticeship covering a period of five years. Other branches have none.

The school, however, has for its purpose the higher technical training rather than covering the regular trade. It aims to produce an "all round man" who will very shortly become a leader of production in the capacity of superintendent.

The course is divided into heavy leather and light leather, each division covering a period of 1,404 hours, the trade attendance being as follows: Day school, 38; night school, 105.

The day school operates 7 hours a day, 5½ days a week, and 36 weeks a year, covering a period of about 2 years. Upon graduation the student is given a diploma of leather manufacturer.

The night school covers a period of 2½ hours each evening, 3 evenings a week, and 25 weeks a year, for a period of 3 years. Upon graduation the student is given a City and Guilds Institute and Leather Sellers' Co. certificate.

The general direction and supervision of the school is under the control of an advisory board, with a subcommittee of nine members from the leather sellers' organization. They have the complete charge of the school and its management.

The entrance requirements are by examination. For the day school the applicant must be at least 16 years of age, and have completed one year's practical experience in leather production. The evening school applicants must also be at least 16 years of age, and, further, must be connected with the leather trade. The tuition fees for the day school are £40 per annum, while that of the evening school is 5, 10, and 15 shillings a year. The tuition for special courses varies.

The product consists of the regular variable factory production, the income from which is about £750 a year.

The school is by no means self-supporting, and the students receive no wage. One interesting feature of the school is that there are several foreigners, consisting of Germans, Chinese, Danes, and Belgians, a very unusual condition in the schools visited. The other members of the student body are mostly sons of the leather manufacturers engaged in the business. They are sent to this school so that they may be able to obtain a more highly technical knowledge of the business, as well as of the most improved and model methods of manufacture. The number of students graduating, however, is far from sufficient to supply the applications made by factories for their employment.

## THE LONDON COUNTY COUNCIL TRADE SCHOOL FOR GIRLS,

Queen's Square, Bloomsbury, W. C., London, England.

One of the most interesting and in itself typical of the "all-day" preapprentice schools which I had the opportunity of observing was the London County Council Trade School for Girls, Queen's Square, Bloomsbury, W. C., London. It is the outcome of an earnest endeavor and simple beginning on the part of a public-spirited woman, who originally established it by the opening of the Westcot Tailor Shop operated by 15 girls.

The success of the first year broadened into another class the following year. In 1907 it was taken over by the London County Council in temporary quarters at Morley College and was finally transferred in 1909 to the present building in Queen's Square.

The aim of the school is to fit girls for earning a livelihood by training them for skilled employment and by offering improvement courses for those already employed in workroom life.

The school started with the idea of covering the apprenticeship in each trade, which, in that locality, embraces a period of two years. This has been accomplished. The apprenticeship in the trades covered still exists in the locality at present without indentures. It is impossible, however, for a girl to enter much under 16 years of age, while she can enter this trade school at 14, and in two years, when otherwise she would only just be entering the trade, she will have two years' trade training to her credit and no apprenticeship to serve.

Tradespeople generally bear themselves very pleasantly toward the institution and are much pleased with its results. Through the graduate alumnae, which is called the "Old Girls' Association," considerable spirit is maintained amongst employees generally. There is little association with employers, but parents are very greatly interested and grateful for what is done in the way of training their children for increased efficiency.

The London County Council has entire direction of the school, although it is subject to the approval of the national board of education.

The monetary provision for the work annually is £4,000 and is derived from the following sources:

*Annual funds for trade school for girls, by sources.*

Sources.	How raised.	Annual amount.
National board of education.....	Grant.....	£700.
Fees.....	Tuition.....	10s. a term.
Sales.....	Rate.....	Small amount.
London County Council.....		Balance.

The year is divided into three terms, and the fees are payable in advance, 10 shillings each term, or 30 shillings a year. Some scholarships are offered to girls through competitive examinations. These are based mainly on what a girl would be likely to earn during the same period of time were she to enter the regular apprenticeship in the trade rather than the trade school.

The school year begins at Easter and is so planned that at the end of the course the graduates enter the trade in the beginning of the busy season.

All students are received for a probation period of three months; at the end of this time they are either requested to leave or are admitted as permanent students. At the end of the first year, parents are obliged to give the proper assurance to the London County Council that it is their purpose to have the child actually use the training for trade employment after graduation, otherwise the child is discontinued. The following is a form showing the method by which this is carried out:

LONDON COUNTY COUNCIL.

TRADE SCHOOL FOR GIRLS, QUEEN'S SQUARE, BLOOMSBURY.

This is to certify that it is my intention that my daughter, Getta Cohen, should enter the trade of millinery on the completion of the two years' course of training at the above-named school, and for this reason I desire that she should complete her second year's training in this subject.

Date, March 29, 1910.

(Signed) L. COHEN.

Parent or guardian.

By this means such persons are eliminated as may be likely to enter the school for the purpose of obtaining the general education rather than the trade training for actual employment.

The girls are trained not on the exercise nor the project basis, but all the production is commercial in its nature and is turned back to apply on the maintenance of the school. Orders are taken from private persons interested in the school, and the charge made covers the cost of the material and one-third the market value for the making, this being decided by the individual teacher who has had working experience in the trade.

The school is open in each trade 7 hours a day, 5 days a week, and 42 weeks a year during a period of 2 years.

The trades taught are the following: Corset making, 20 students; ladies' coat tailoring, 17 students; ladies' skirt tailoring, 17 students; dressmaking, 40 students; millinery, 40 students; photography, 30 students.

In order not to be misunderstood it is best to explain here that the corset making as taught is from the same viewpoint as the dressmaking in our American trade schools; that is, the girl is not



trained through speed-power machines for employment in a factory, but rather for the high-class salaried work of the corsetière, which has the same relation in the making of woman's apparel as the dress-making shops, and consists entirely of custom work or corsets made to measurement.

About two-thirds of the time is given to actual trade instruction on commercial work each day, and one-third is devoted to continuing general education in English, arithmetic, drawing, hygiene, and physical exercise. The subjects, however, are all related to the trade activity and are mainly the outgrowth of the actual industrial work done in the school differentiated according to the trade.

Besides the day school, there are also continuation school and evening school departments for those employed in the trade. If a girl under 21 years of age is able to show a bona fide indenture or certificate from her employer, she is admitted without charge; if not, the fees are as follows: If earning over 30 shillings a week, 10 shillings the session; if earning 30 shillings or less a week, 4 shillings sixpence the session.

The evening department which is open one evening a week from 7.45 to 9.15 is to be discontinued, for the reason that the trade hours are too trying. Employment conditions are such that a girl works each day from 9 a. m. until 12 and from 1 until 7.30 p. m. In the afternoon half an hour is allotted for "tea." In cases where this allowance is not made, the shop closes at 7 p. m.; and where it is permitted, it usually comes between 4.30 and 6, the girls furnishing the food and the factory the tea.

The continuation school is offered in dressmaking and millinery. The girls complete a course of 24 lessons, attending on Wednesday and Thursday from 5.45 to 7.50 p. m., the employers paying the apprentice wage while the girl is receiving her instruction. It is of much importance here to note that the employers are not strongly in favor of this department, as they do not wish to sacrifice this amount of production on the part of their employees.

The wage of an apprentice girl without training in the trade is as follows: First year, 2 shillings sixpence to 3 shillings a week; second year, 5 shillings a week.

Graduates of the school begin employment at 10 shillings a week. No difficulty is found in obtaining positions for the girls upon the completion of their course, even though there is no organized placement department in the school. The employment of the girls is due to the initiative and effort of the principal and teachers, who, through their consultative committee of employers (which is very important) and the excellence of instruction, find no difficulty in placing them, the demand being much greater than the possible supply from the school.



The salaries paid teachers are similar to those for employment of the same nature in America, but in the case of the individual teacher it varies with the trade and depends upon her previous earning efficiency.

The general direction of the school is in the hands of an advisory board. This is composed of men and women from the various trades acting in conjunction with a committee of the London County Council.

Twenty-five hours a week is considered the maximum time for teaching on the part of the individual teacher. The general organization of the instruction is specialized by trades or subjects of teaching and is related to the trade activities of the students in so far as possible.

The entrance requirements for the day departments are that the student must be at least 14 years of age and have completed the seventh standard of the general elementary school. The evening school merely asks that the applicant be employed in the trade.

The receipts from earnings are deposited weekly by the school in the general local treasury, and although eventually applied on the maintenance of the school can not be used directly.

The school receives £10 a month to cover the cost of supplies which are invoiced directly to the department for which they were purchased. The earnings are credited to the appropriation.

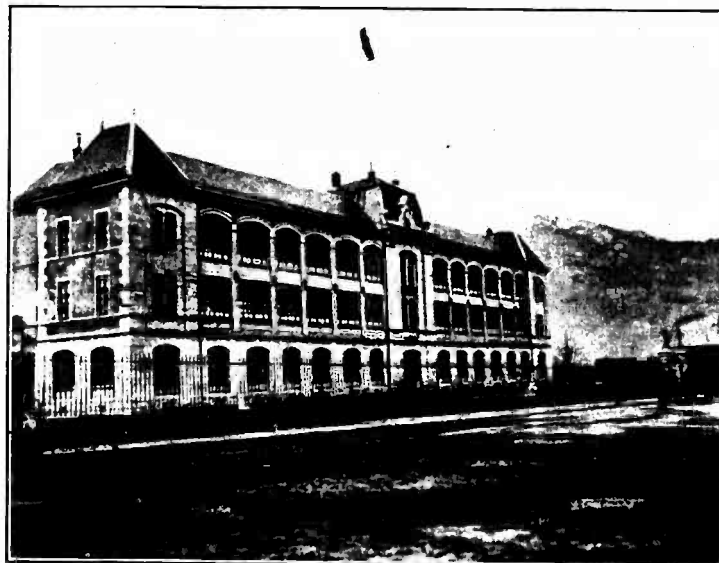
In the case of day teachers teaching evening school, the day employment is lessened so that the teacher can not exceed the maximum number of weekly teaching hours.

On the whole, the entire school represents a center of wonderful industrial activity, each girl being a working unit in a creative society of which she is a member. Voluntarily she is working as the work-a-day world works, and is learning from her actual experiences and activities. The atmosphere of the entire surroundings is that of a real workshop full of life and energy, rather than that of a school enshrouded in the atmosphere of tradition.

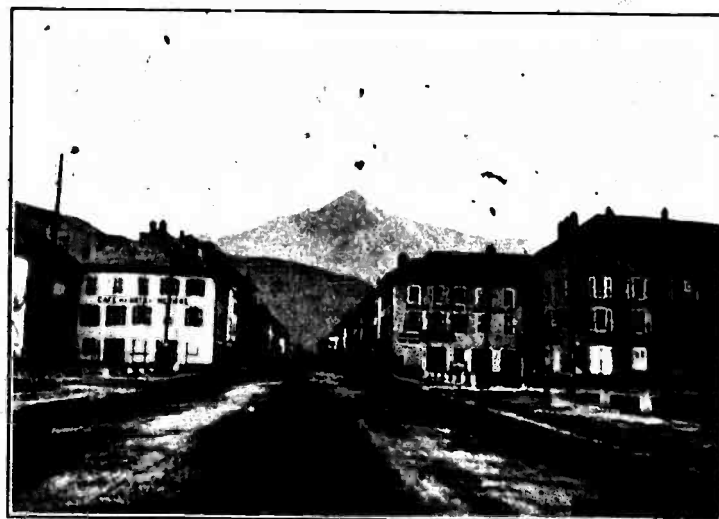
#### THE LONDON COUNTY COUNCIL SHOREDITCH TECHNICAL SCHOOL,

London, England.

The Shoreditch Technical School represents the day and evening trade school which is common and typical of the English activity in this direction. It is the type of school which operates 6 hours a day, 5 days a week, and 41 weeks a year, during a period of 3 years, during which time the students are prepared for trades. Opportunity is also given for people already employed to improve their proficiency, through the evening school facilities.



A. NATIONAL SCHOOL OF WATCHMAKING, CLUSES, FRANCE.



B. MAIN STREET OF CLUSES. WATCH FACTORY ON THE RIGHT.



GYMNASTICS.



PHOTOGRAPHY.



MILLINERY.



GARMENT MAKING.

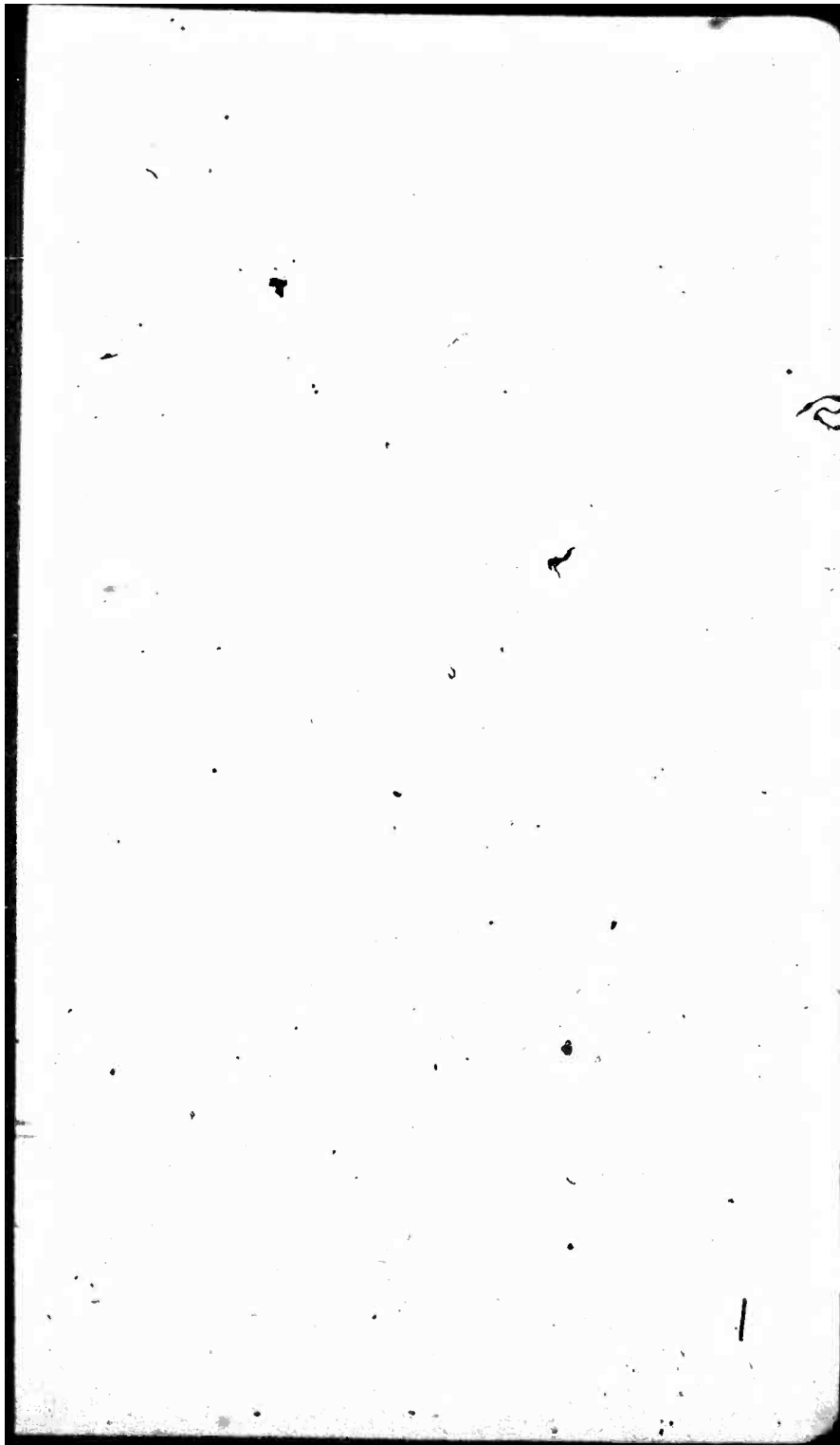


DRESSMAKING.



CORSET MAKING.

TRADE SCHOOL FOR GIRLS, BLOOMSBURY, ENGLAND.



The funds for the maintenance come from the London County Council, the national board of education, and fees, the last being practically negligible.

Conditions in the trade are such that the trade school has become a necessity because not only of the general decline of apprenticeship, but also of its entire loss through division of labor and specialization in production. In general the attitude of the trades people is very favorable, although but little active encouragement is extended. They recognize the need of this training, but seem rather indifferent toward promoting it.

The goldsmiths' guild, the merchant tailors, and the haberdashers extend some slight support and encouragement through endowing special scholarships and prizes.

This school has no relation whatever to the other local schools, being directly under the general county administration, inspected and improved by His Majesty's inspectors and county council supervisors. The relation to the General Government is more nominal than effective, although it comes under the approval of the national board of education, which pays a small grant for its maintenance annually. It is very important to note, however, that this appropriation is based on the actual number of hours of instruction per student annually in all the courses.

The trade work approximates 3,600 hours and includes cabinet making, carpentry and joinery, pattern making, wood carving, shop and office fitting, electric wiring and feeding, decorative metal work.

In connection with this comes the academic work, which covers approximately two-thirds of the time. Instruction is given in the following subjects: Mathematics, English, history, geography, art and designing.

One very important feature, however, is that all of the academic instruction is related to and interwoven with the actual trade process and shop production.

The larger numbers are found attending the evening department rather than the day school, which seems to be true generally. The school has the following attendance:

Day school allied wood-working trade.....	100
Night school, wood work.....	300
Metal work.....	50
Upholstering.....	50
Electric wiring and instrument making.....	100
Designing and decorating.....	100

There is also a special course for teachers of handicraft who are preparing for teaching courses similar to our manual training in the general public schools. There are 40 students in this course.



Evening school, however, covers a period of 2 hours each evening, 3 evenings a week, and 42 weeks a year, during a period of 2 years, after which a regular school certificate is given.

The general plan is that academic studies related to trade activities are given one evening a week, and the actual shop training is given two evenings a week.

The general direction and maintenance is under an advisory board of 12 members appointed by the educational board as follows: Employers, 4; trades union representatives, 2; officers of the London County Council or governing educational board, 6.

The maximum number of hours of employment of teachers in general is 30 hours a week with 15 to 20 day or evening apprentices to each individual teacher, the salaries running from £200 to £250 a year for both day and evening teaching. The evening instruction is very often rated at about 10 shillings to 10 shillings 6 pence a night. In regular work, however, this number of students is usually doubled, which is made possible because of their standardized ratings due to the entrance examination.

Any student 13 years of age may enter the day school, provided he passes the entrance examination. There is no examination for evening school, but students must be above the age of 16 and must be engaged in the craft which they wish to study. A fee of 30 shillings for 41 weeks is charged each individual day student; those training to become teachers in the special course pay 9 guineas a year. For the children who can not afford to pay this fee a special scholarship is given on a competitive basis. This really amounts to a charitable aid from the county for children who can not afford the cost of this kind of education. The scholarships are based on academic competitive examinations, and consist of a payment to parents for the support of the children during their term in the school, which is an equivalent of the actual wage which they would otherwise earn were they employed in the regular trade itself.

The evening students in order to insure the fact that they are employed in the trade must either submit their indentures or bring a certified statement from their employers. These persons under 21 years of age are admitted free for evening instruction.

The general fees for these courses are as follows: For those earning at the rate of 30 shillings a week, the charge is 10 shillings the season; for those earning 30 shillings a week or less, 4 shillings 6 pence is charged the season. This holds good provided the people are employed in trades or occupations upon which the teaching of the school has a distinct bearing; if not, they may be admitted at a charge of 10 shillings 6 pence the season.

Evening classes are also held for women's instruction in cooking, home dressmaking, upholstery, costume making, and trade dressmaking.

Those under 21 years of age who are actually working in the trade are admitted free; to adults the fee is 2 shillings 6 pence the season.

One feature of the organization of this school, which is rather unlike and a step in advance of any similar school outside of London, is that students are taught their trade training on actual commercial work of a productive nature, which is obtained by individual orders both by the school and by the student.. In such cases the material is paid for and the labor earnings revert directly to the students themselves. Some work, however, is on an exercise and model basis until the boy has obtained a productive degree of proficiency. The cost of the article is then estimated by the teacher figuring only the cost of the material and checked by the boy's actual working order.

Another very important department at the Shoreditch school which speaks strongly for its breadth of scope is the girls' day-trade school department. Much of trade education is one-sided, pointing more to the boys' welfare than to the girls'; but Shoreditch school gives an equal opportunity to each, if not a rather better provision for the girls. The girls' courses include designing and making of wholesale costumes, hand and machine embroidery, upholstery, designing, trade dressmaking, and general home making.

Instruction is primarily designed actually to take the place of apprenticeship, is given in regular workrooms in the school, and covers a period of 2 years, 5 days a week from 9.30 a. m. to 1 p. m. and from 2 to 5 p. m.

The school year, however, is divided into three terms—April to July, September to December, and January to March.

For the first three months each new student is received on probation, after which he is permanently appointed or advised to withdraw.

About two-thirds of the time is devoted to trade instruction and the remainder to the general education of the student evolved from the actual requirements of the trade and related to shop activities of instruction in the following subjects: English, composition and literature, arithmetic, drawing, hygiene, physical exercises.

The school is intended primarily for girls who would otherwise leave the public elementary schools between the ages of 14 and 16. A fee, however, of 10 shillings per term, or £1 10s. a year is charged as tuition. This is governed as in the other London County Council schools, and is provided for in the case of children whose parents are unable to pay the amount by the regular system of free scholarships already described in the boys' school.

In the domestic economy department a most unique scheme of instruction is followed. Each girl must take a course in this training to give her a thorough insight into the efficient and economical management of a home by learning the principles and processes of cooking, purchasing, laundry, and needle work. A regular home flat

is provided in the school building, where each girl may live for six full weeks during the school year, so as to enable her to learn through actual practice and experience and to apply the lessons in the various classes.

The cooking school also furnishes a lunch. In this department one girl is housekeeper and must run the home on a specified rate, making all the purchases, providing all the supplies, supervising the preparation of the food, and attending to the general management. This course is maintained at a charge of 8d. a day, the girls having their own sleeping apartments in the building, and caring for them. They are permitted to go home at different periods for visiting, but all other time is spent in the school under the guidance of a teacher or preceptress who has charge of their instruction and lives in the building herself. The special fee for this course is 10 shillings a term for girls under 16 years of age and £2 a term for girls over 16 years of age.

The teachers in the girls' department are employed on the same basis as regular employees in the trade, although their teaching covers only from 5 to 6 hours a day for the regular school year. Each teacher has 20 to 25 students, and salaries range from £80 to £130 a year.

The product of the girls' department in the trade school is also of a commercial nature but differs from that of the boys' by being more of an industrial nature, as the school organization itself takes the order and the earnings are applied on the cost of its maintenance.

The general organization of the Shoreditch School comes directly under the London County Council. The members of this board are elected directly by the people for a term of three years for the management of the municipal affairs of London County. The educational department is assigned to a committee of the council which is in part divided into subcommittees. The school then is subject to the general approval of the national board of education, which is the Government authority of the whole nation and comes under the direction of the minister of education.

### LEATHER TRADE SCHOOL,

Bethnal Green Road, London, England.

A very interesting school, which represents the private type maintained by manufacturers, is the Leather Trade School, Bethnal Green Road, London. It is entirely outside of the organization of the general public-school system and is maintained wholly by a manufacturers' association, the Leather Sellers Co., which appointed a joint committee to carry out the project and supervise the work.



The school originally was the outcome of a committee of the boot and shoe manufacturers' association, formed in 1886. This committee enlisted the support of the Leather Sellers Co., and that company in turn took the matter up with the City and Guilds of London Institute and suggested that it come under the charge of that body. Temporary quarters were leased, and the building was adapted and fully equipped as a complete boot and shoe factory!

In 1889 the department was opened for students three evenings a week, representing the first boot and shoe school established. Much of the work was experimental, because at that time the industry was undergoing many changes caused by the introduction of machinery in the trade.

Later a general committee composed of representatives of the London Institute, the livery companies, and the boot and shoe manufacturers' association was appointed to have the direction and management, the membership of the committee being proportionate to the amount of the annual contributions of these bodies. This general committee appoints annually an advisory trade committee which is responsible for the immediate supervision of the school, the installation of equipment, and the appointment of teachers.

Some two years later the school was again reorganized, the educational work was broadened, and a three years' course was provided in each department, consisting of the following: (1) Elementary, (2) intermediate, (3) advanced.

Primarily the school was located on Bethnal Green Road, because this section is the center of the boot and shoe industry, and it was established with the purpose of "improving" mechanics already employed in the trade. At the present time the department is open only for evening instruction; the day school is under temporary suspension, awaiting a new building and increased appropriations. In general, the community's attitude is very favorable toward the work of this school. The tradespeople are pleased to get an opportunity for education in their trade; the labor unions are satisfied so long as membership is limited to those already employed in the trade; the employers find the results so satisfactory that they feel fully compensated for the necessary expenditure in its support because of the increased efficiency of the workmen in their employ. No relation now exists with the local education department, but a connection is under contemplation.

The organization is based upon departmental specialization, which covers the following divisions:

1. Boot and shoe manufacture—(a) Lecture work, (b) pattern cutting, (c) clicking, (d) upper stepping, (e) upper machining, (f) rough-stuff cutting, (g) lasting, (h) finishing, (i) sole sewing and stitching, (j) machine finishing.
2. Boot and shoe making—(a) Hand-sewn making, (b) sew-rounds making.
3. General—(a) Last making, (b) lasting fitting.

Each of these divisions is carried on according to a subdivision of the general work based on the number of terms studied: First year, elementary; second year, intermediate; third year, advanced.

More specific information may be obtained by writing for the syllabus of instruction which goes into each minor detail of the regular outline.

The educational work is the outcome of the productive work, which consists of a commercial product sold for the cost of the material. The selling takes place at a periodical sale which occurs at various periods, depending upon the amount of production.

The three years' course is divided into 2 hours each evening, 2 evenings a week and 30 weeks a year, a small tuition fee being charged. The technical training is closely interwoven with the trade processes and is most thoroughly organized by the director of the school.

The teachers must prepare an outline of their lessons three weeks in advance. They are then submitted to the director and revised so as to insure a proper standard of coordination in the school, yet without stamping out the individuality of the teacher.

The monetary provision annually is £1,400, subscribed as follows: From the City and Guilds of London Institute, £600; Leather Sellers' Co., £200; Cordwainers' Co., £200; Skinners' Co., £21; Boot and Shoe Manufacturers' Association, £151. The balance is made up from school fees and sales.

This school represents what may be termed the monotechic type, founded and supported by the boot and shoe manufacturers. It was necessitated by the limited degree of proficiency in the ordinary workmen who have been forced to fit themselves by actually working at the trade—a situation that merely indicates further the inadequacy of the actual shop for training workmen.

The school seems to be going through the regular process of evolution from the private school arising in response to an immediate need, and has proved itself to the general department of public education a valuable asset as an addition to the regular school system.

### THE NAUTICAL COLLEGE,

Liverpool, England.

The Nautical College Central Technical School was established by the corporation of Liverpool, December 1, 1892. Its object is (a) To give sound and efficient training to apprentices and officers who wish to obtain board of trade certificates; (b) to afford to the members of the mercantile marine means of obtaining complete and scientific training for deck officers and marine engineers.

Since its establishment, 3,000 members of the mercantile marine have taken courses, 2,614 of whom have obtained the board of trade

certificates; the others already held such certificates, and were merely continuing their studies in the higher branches of nautical science.

The courses in the college comprise three divisions as follows: (1) For apprentices and ordinary seamen; (2) for pilots and fishermen; (3) for officers.

The course in division 1 deals with subjects belonging to a nautical career. Examinations with extension courses of study to be carried on at sea are arranged, books from the college library being loaned to apprentices for study at sea. In connection with this division the college offers a junior diploma which comprises three certificates, as follows:

A. Mathematical principles of the problems in the board of trade examination for second mate.

B. Geography of the seacoasts, including ports and products of different countries.

C. Meteorology, including use of instruments and skill in observing.

The fees for this division are as follows: Apprentices, £1 1s. paid in advance to cover a course of instruction extending over the whole period of apprenticeship, or 2s. 6d. per week; seamen, 2s. 6d. per week.

Division 2 is planned mainly for masters and mates of home-trade vessels, who are preparing for pilot's licenses.

Division 3 is designed for the study of the higher branches of navigation and nautical astronomy, as well as of subjects of utility or interest connected with shipping. The curriculum includes mathematics, magnetism, mechanics, hydrostatics, marine surveying, astronomy, and meteorology bearing upon the duties of ship masters. Supplementing this there are also courses in correspondence, ship's bookkeeping, and maritime law, proper attention being given to flag and flash signaling and to naval architecture.

The fees for these courses vary from 2s. 6d. per course to £2 2s., being estimated according to the course taken.

Evening classes are also held in naval architecture weekly during the winter session, from the middle of September to the end of May.

Diplomas are awarded as follows: (1) Junior diploma, (2) senior diploma.

The courses included in these diplomas are outlined as follows:

#### JUNIOR DIPLOMA.

(1) Mathematical principles, (2) navigation, (3) nautical astronomy; (4) instruments, (5) geography, (6) meteorology.

#### SENIOR DIPLOMA.

(1) Navigation and nautical astronomy: (a) Arithmetic, (b) algebra, (c) geometry, (d) trigonometry, plane, (e) trigonometry, spherical.

(2) Navigation.

(3) Nautical astronomy.

(4) Nautical surveying: (a) Symbols, (b) laying off angles, (c) charts, (d) instruments, (e) base lines, (f) soundings, (g) chronometers, (h) meridian distances, (i) tides and tidal observations, (j) plotting a survey.

(5) Mechanics and stability: A.—Mechanics: (a) Units, (b) force, (c) friction, (d) center of gravity, (e) moments, (f) stress and strain, (g) properties of materials, (h) levers, (i) wheel, screw, and wedge, (j) pulleys, (k) pendulum. B.—Stability: (a) Fluid pressure, (b) buoyancy, (c) specific gravity, (d) metacenter, (e) flotation, (f) measurements, (g) stability of ships, (h) rolling.

(6) Magnetism and deviation: A.—Magnetism: (a) Natural and artificial magnets, (b) theory of magnetic polarity, (c) the magnetization of ships, (d) apparatus. B.—Deviation: (a) The compass, (b) magnetic qualities of steel, hard and soft iron (c) directive force, (d) instruments.

(7) Meteorology: (a) Meteorological instruments, (b) the atmosphere, (c) climate, (d) atmospheric phenomena, (e) winds, (f) laws of storms, (g) practical application (h) the ocean.

## II. FRANCE.

### ÉCOLE PROFESSIONNELLE MENAGÈRE FOR GIRLS,

Paris, France.

The trade and home-making school for girls was founded in 1880 by the national bureau of commerce and industry and the city board of education. It is maintained entirely by the city at a cost of 120,000 francs a year, raised by general taxation, and disbursed by the local board of education under the approval of the national bureau of commerce and industry. It combines training for girls in trades and home making:

The courses and attendance are as follows: Lingerie making, 26 students; dressmaking, 133; ironing, 18; flower making, 25; millinery, 25; vest making, 20; corset making, 28; embroidery, 26; total, 301.

The length of the course consists of instruction for 8½ hours a day, 6 days a week, 40 weeks a year, during a period of 3 years, except in the ironing and laundry work, which consists of two years' training. The time is about equally divided between academic and trade work, the difference being between this and other trades schools that the studies are the same as in the regular elementary schools with no relation to the trade. They are as follows: Arithmetic, French, history, geography, writing and reading, bookkeeping.

This school is also, like the other trade schools, under the direction of an advisory board, made up mainly of men interested in the trades taught. The teachers are taken in the trade, and the general plan of organization is specialized teaching. One feature of great importance is that teachers are required to work in the trade different periods in the year, so as to keep in touch with new developments.

The requirements for entrance are that the students must be from 13 to 17 years of age, and be appointed on competitive examination.

The actual trade practice is obtained through regular trade products, sold at regular prices, which are at present standardized, being

based on the cost of material and a small charge for labor. The income reverts to the city treasury. In 1911 the earnings of the school amounted to 14,000 francs, or approximately \$2,800.

When the school was first established, there were only 6 girls attending, while at present there are over 300.

Luncheon is served at the small cost of 35 centimes or about 7 cents. The school is also provided with bath service, which is in part compulsory for the students.

The work in embroidery is very unlike that in the London school. It consists only of hand work, but advances into a very high class of production of a costly nature for individual customers. Each girl however, is obliged to spend at least one hour a week at various points in the cooking department, the idea being to train her in this way to a degree in home-making lines.

There is no charge for tuition to students who are residents of the city of Paris. If they live in the suburbs, the locality has to pay 300 francs a year per student. If they live outside of the suburbs the tuition charge is 400 francs a year or about \$80. Courses are offered 5 nights a week, and evening instruction in designing, water color, language, typewriting, shorthand, singing, violin, and piano is given. Instruction on the piano is also offered Sundays from 9 a. m. to 2.30 p. m.

### ÉCOLE BOULLE,

Paris, France.

The Boule School was founded in 1890 by the city in response to a trade need for skilled artisans and creative mechanics.

The monetary provision is 225,000 francs a year and is raised from the general education fund by the city.

Courses are offered, with the following membership: Sculpturing wood and stone, 36 students; furniture making, 60; metal repoussé work, 36; upholstery and tapestry, 45; machinists, 24; engraving and die sinking, 15; jewelry work, 5; metal turning and spinning, 16.

Instruction is given daily from 8 a. m. to 6 p. m., 1 hour being allowed for lunch, 6 days a week, 43 weeks a year, during a period of 5 years. In the third, fourth, and fifth year the daily instruction is extended to 7 p. m. Formerly the course was three years, but it has just been increased to 5, adding two special supplementary years of attendance, which are optional for specialization. The first three years, however, are necessary for graduation, which so trains a boy that he covers completely the term of his apprenticeship in the trade.

In the beginning there was much objection by the trades unions to this claim, but at present they are thoroughly and fully in sympathy with the work.



The general relation of academic training is one-half time during the first, second, and third years, the other half being devoted to trade practice; in the fourth and fifth years only one-fifth of the time is given to the academic work. The studies followed consist of the following: Art design, clay modeling, water color, industrial design, applied science, history of art, French, mathematics, bookkeeping, English and German as applied to the trade.

The entrance requirements are that a student be 13 to 16 years of age, admission being based on examination.

The general policy of this school is guided by an advisory board. The members are appointed by the city board of education, and the entire organization is completely subject to the approval of the State through the bureau of commerce and industry.

The actual trade training is based on exercise work and general products in each trade of the highest degree of art in workmanship. Some of the work is of such excellence that it is sold by the city at prices higher than the market, the proceeds reverting to the city treasury.

The general organization of this school is of the regular day-trade type, the boy being taught the trade in its entirety before he enters employment. The student entering chooses the vocation for which he wishes to prepare and studies that one pursuit only. The departments, however, are related so that the metal-working trades assist in providing fixtures for the production of the wood-working departments, and vice versa. The quality and standard of workmanship, however, are of the highest excellence, following out the well-known efficiency of the French people in combining art and construction.

Extension training is offered in the evening school 2 hours nightly, according to the demand. It is only, however, the study of applied theoretical subjects.

Another department of extension training is open from 8 to 11 a. m. Sundays. This course is mainly for design and water color.

#### BERNARD PALISSEY SCHOOL,

Paris, France.

The Bernard Palissesey School is a municipal school and represents the purely art type of trade school. The purpose is to train men as art designers in crafts—textile designing, pottery decorating, wood carving, and jewelry designing.

The course covers a period of 6 hours a day in winter, 7 hours a day in summer, 6 days a week, and 40 weeks a year, during a period of 4 years.

The first year only theoretical studies are taken up as related to the trade; after that a portion of the time is devoted to practical instruction on an exercise basis. The academic studies, however, deal entirely with applied design, both decorative and constructive.

The entrance requirements are that students must be 13 years of age and must pass entrance examinations in designing. No other academic training is taken into account except the study of design, which is very extensive and compulsory in the elementary school.

An advisory board of 16 members is in charge directly of the organization, being responsible to the local board of education and the State Bureau of Commerce and Industry, under whose approval the school is operated.

There is a great demand for this type of training in Paris and the school is unable to provide fully for the number of applications received, thus far about 20 per cent having been accommodated. The appointments are based on competitive examinations which are held in December, March, and July.

The actual trade training is mainly of an exercise nature, but developed in such a way as to be gradually incorporated in actual production, which is finally placed on exhibition but not sold.

### ÉCOLE MUNICIPALE PROFESSIONNELLE,

Paris, France.

The Municipal Trade School, founded by the city of Paris in 1873, represents the general industrial trade school in metal-working trades. The purpose is to cover the apprenticeship in the trades taught, and to give a background of training to provide for advancement in the trade.

The annual appropriation, which is provided entirely by the city of Paris and raised from the general tax, amounts to about 170,000 francs a year. Credit is given in the trade to graduates for the full apprenticeship, so that they start work at about 5 francs a day, which represents the wage of an ordinary journeyman.

In the beginning of the work of this school there was great objection on the part of the labor unions regarding the credit to be allowed graduates. After the courses had been standardized and more highly developed and the graduate apprentices had begun to serve in the trade, the objection gradually decreased, so that now there is none of it whatsoever.

The actual administration of this school is under the direction of the city department of education, the city furnishing all the funds. The general organization, however, is subject to the approval of the State through the bureau of commerce and industry.

The trades taught consist of the following: Forging, metal spinning, precision work on fine measuring instruments, pattern making, hammered metal, joinery, locksmithing, plumbing, and electrical work.

The general course consists of instruction 6 hours a day, 6 days a week, and 43 weeks a year the first year; in the second and third years the time of daily attendance is increased to 7 hours a day.

The academic studies consist of French history, industrial geography, mathematics, and drawing, and the relation of academic training to shop time is about one-third daily.

In all there is a total attendance of 310 boys, the school being devoted to the instruction of boys only.

The entrance requirements are that all students must be at least 13 years of age, and admitted upon examination; no previous training, however, is required. The school is entirely free to students who are residents of the city, although a ratio of about 1 to 10 are permitted to attend from the suburbs.

The general policy of the school is subject to an advisory board which meets six times a year, and is made up as follows: Two from the state department, 1 from the city, 8 aldermen, and 10 tradesmen.

The organization of teaching is specialized according to the trade, with special teachers giving the necessary time to academic training.

The product of the trade shops is usually purchased by students at the cost of material or consists of school repairs and equipment. The introduction to the trades is usually carried on through exercise work which involves various operations.

At the time of my visit to this school it was undergoing considerable extension and reorganization. Obsolete machines were about to be replaced by later and more accurate types. An interesting feature was the installation of several American-made machines, which were selected because of the gradual introduction of American-made machinery by manufacturing concerns.

The trade product itself was accurate to a large degree, although none of the cost-keeping systems were apparent. No consideration or attention was given to training the boys to have any appreciation of the cost of production or material; the chief emphasis was upon the technic.

Provision was made for luncheon during the noon hour at the small price of 50 centimes, or about 10 to 12 cents.

The academic work was of the general school kind and was conducted in anything but attractive classrooms.

**NATIONAL SCHOOL OF WATCHMAKING,****Cluses, France.**

This school, at present accommodating about 160 day students in the watchmaking trade, was founded by the Italian Government in 1848 and ceded to France by the treaty of 1860. It is entirely supported, maintained, and supervised by the National Government, under the Bureau of Commerce and Industry.

It is located in the little village of Cluses (population 1,100 to 1,200) and is entirely surrounded by the Alps, being almost at the foot of Mont Blanc. This town has been the center of the high-class watchmaking industry since 1715. Several small factories are located there, with 18 to 20 men employed in each.

The work is for the most part let out to residents of the village on the old "home center" basis, almost every home showing the watch lathe in the front window rather than decorative effects. Grandparents, parents, brothers, sisters, and children all join in the various processes of turning out the individual product or part of a watch in which this family has specialized for two to three hundred years. The parts are then sent from the different homes to the small center factories in the village, where they are assembled later to be shipped to the large central district factory in Geneva.

There is no tuition charge for instruction, as the State pays for the maintenance of the school which amounts to about 100,000 francs (\$20,000) annually.

The school is a regular productive factory to a large degree, although some of the training is obtained by the making of sample parts and sample watches, which later become the property of the students, the cost of material only being charged to them.

The school operates 9 hours a day, 6 days a week and 42 weeks a year, during a period of 3 years.

The academic work consists of the following studies: Arithmetic, 2 hours per week; algebra, 1 hour; drawing, 4 hours; geometry, 2 hours; French grammar and composition, 1 hour; applied science and mechanics, 3 hours.

The academic work covers about 2 hours a day or approximately 25 per cent, the balance of the time being given to shop practice.

The entrance requirements are that each student must be 14 years of age, and have completed the equivalent of at least 6 years in an elementary school. As before stated, no charge is made to students who are of French nationality. Foreigners, however, are not permitted to attend. For boys who are poor or needy a pension is provided by the State and the town, arranged as follows: From the town, 100 to 800 francs per year; from the State, 100 to 250 francs

per year. This is to cover the boy's expenses while at school, in addition to what his parents may be able to provide for him. It is a beneficence in one sense, although based primarily on the boy's individual merit, personality, application, and interest in the trade.

There is also taught in the same department the mechanical precision trade for boys learning to become expert machinists along the line of watchmaking machinery. The early part of this training is based on simple machine exercise—filing, chipping, and fitting, from which the students gradually grow into making regular productive machinery.

This school stands as representing a type in itself, the building being erected, the equipment provided, and the maintenance paid entirely by the State.

There is great interest shown on the part of the students. A reading library is provided, and military drill and physical exercise are included as part of the instruction; every effort is made by the school organization to promote the highest possible esprit de corps and interest in their trade by the students.

### III. GERMANY.

#### TRADE EDUCATION IN GERMANY.

So much has been published regarding trade education in Germany that only a very brief analysis of the national scheme is given herewith. Schools and factories were visited at Essen-Ruhr, Duisberg, Cologne, Mulheim am Ruhr, Berlin, Chemnitz, Dresden, Munich, and Augsburg.

There are three divisions in the German school system: (1) Continuation schools, (2) lower technical schools, (3) higher technical schools.

#### CONTINUATION SCHOOLS.

In this department we find Germany divided into the northern and the southern types.

*Northern type.*—In northern Germany the continuation school consists of purely academic training not exceeding an average of 6 hours a week, the students obtaining their practical trade training in an organized apprenticeship in the factory. The academic instruction is usually carried on in the regular public schools, in some places from 6 to 9 o'clock in the evening, in other places from 6 to 9 o'clock in the morning, alternating different days of the week to make up the required time of attendance which is compulsory.

The studies consist of applied mathematics, bookkeeping, applied drafting and science. Some time also is devoted to the study of political government and religion.



*Southern type.*—In southern Germany, as in Munich, trade processes are taught in the school in addition to the academic studies. The system in Munich has been compulsory for boys since 1875. In the beginning they were required to attend from 2 to 5 p. m., Wednesday, and 5 hours on Sunday, the studies consisting of reading, writing, arithmetic, and drawing. Dr. Kerschensteiner, however, revised this system, which had been comparatively a failure, and produced the most excellent scheme which exists there to-day.

Courses are established in all trades for (1) apprentices, (2) operatives of apprenticeship age, (3) mechanics, (4) girls.

In general the course of instruction for each trade is based on the following plan as adapted to the special occupation.

*General course of instruction in Munich schools.*

Studies.	Hours per week.			
	First year.	Second year.	Third year.	Fourth year.
Religion.....	1	1		
Business related to trade.....	1	1	1	
Applied mathematics.....	1	1	1	1
Civil government.....	1	1	1	1
Applied science.....	1½	1½		1
Mechanics.....			2	2
Applied drawing.....	2	2	2	2
Shopwork.....	1½	1½	2	2
Total hours per week.....	9	9	9	4

For boys who are employed as operatives studies are pursued as follows: Religion, 1 hour per week; reading and composition, 1 hour per week; arithmetic, 2 hours per week; political government, 1 hour per week; gymnastics, 1 hour per week; manual instruction and drawing, 2 hours per week; total, 8 hours per week.

Evening courses for workmen are limited to those in the trade, and academic and shop instruction are so related as to provide for the individual needs. Girls are given instruction mainly in household accounting, physiology and hygiene, cooking, and sewing. There is no regular arrangement which is universal in its application for all courses and for all trades, but each course is fitted and adapted to the special needs and conditions of the trade. In some courses during the maximum pressure of business in the trade apprentices do not attend the school, but their time of attendance during the year must average the required number of hours.

In general the schools are housed in central buildings, with the shops therein. This applies to the building, machine, graphic arts, and allied trades. In the butchers' trade, however, the school is in the regular slaughterhouse, a group of apprentices giving up regular time for instruction from a practical butcher. Extensive gardens are provided for those following agricultural studies.

The teachers are in every case primarily tradesmen. Those teaching academic studies are required to obtain actual trade experience before being accepted as teachers.

The general organization comes under the supervision of Dr. Kerschensteiner, as superintendent of schools. Each separate organization is in charge of a director, who is assisted by individual teachers. Some of these teachers are engaged for full time; others, who are employed on a part-time basis, actually work in the trade when not employed in teaching. Consultative committees of masters are also provided in each trade taught. For the most part the trade instruction itself is given by means of productive work. A portion of the time is spent in exercise and model work, but mainly the product reverts to the employer who furnishes the material.

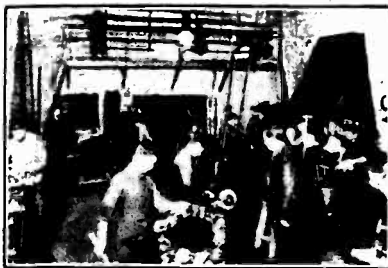
Attendance in the continuation school during the entire apprenticeship is compulsory for boys up to their eighteenth year, inclusive, from 8 to 10 hours a week, and for girls 3 hours a week during a period of 3 years. The number of hours a week for girls is to be doubled in the immediate future. In general, the continuation school is open from September 15 to July 15. Those attending the compulsory classes are not charged for tuition, but those over 18 years of age for whom voluntary continuation classes are extended are charged a fee of 2 to 4 shillings a month. In all, there are about 9,500 boys and 7,500 girls in compulsory attendance, and the optional classes for those over 18 years of age provide for about 2,500.

The general organization is articulated to very good advantage with factory conditions. There are 52 trade courses, in addition to advanced training for those who have served their apprenticeship. A course is established for each trade having a minimum of 25 apprentices. Boys in trades having less than this number are provided for in the general continuation department.

Another important feature of this organization is that at no one time are all the apprentices absent from a single factory, the endeavor being to group them so that different groups receive instruction at different times.

The other technical schools before mentioned are mainly for day attendance of workmen who have completed their apprenticeship and who wish to receive the requisite training to make progress in their trade. A curriculum with a great variety of practical studies is offered, and those attending are permitted to elect studies in whatever is required for their special needs and adapted to their ability. Formerly the course was for 2 years, but persons may elect to remain a longer or a shorter period of time.

The supervision and control of trade instruction in Germany comes mainly under the State, while the executive details are managed by the city. The expenses are divided between city, province,



SMITHS.



MACHINISTS.



LAUNDRY WORKERS.



HARNESS MAKERS.



BARBERS.



GARDENERS.

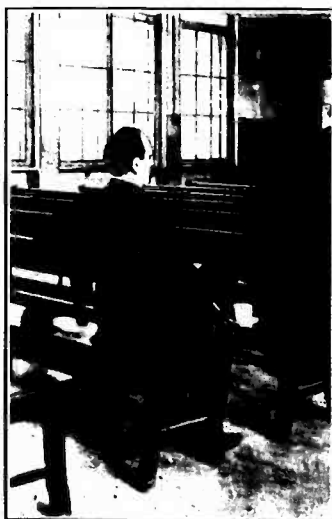
GERMAN CONTINUATION SCHOOL.



MEDICAL ATTENDANCE FOR  
WORKMEN.



TAILORING FACILITIES FOR  
WORKMEN.



INDIVIDUAL LUNCH SERVICE.



CÖBBLING WORK DONE.

FEATURES OF THE GERMAN CONTINUATION SCHOOL.



and State, the cost of maintenance varying with the locality and depending on the extent of the organization and local conditions of employment.

Dr. Kerschensteiner has been successful in establishing a system of training which is compulsory, but nevertheless attractive to the student body. The purpose of the training is to produce good citizens from both a moral and a political point of view and also more efficient tradesmen. Both aims have been accomplished, but the greatest lesson to be learned from this system is the planning, designing, and working out of an individual problem with each individual boy. He is given the opportunity to create through his shop training, to beautify in design through his art training, and to analyze through his academic training, but above all to be compensated for his efforts by the ideal of "joy in work" for which this system is noted.

#### APPRENTICESHIP IN GERMANY.

In order to understand fully the meaning and purpose of trade education in Germany, specifically the continuation school, it is necessary to see at first hand the conditions of apprenticeship in factories. A great deal has been written on this subject, but much of it in the abstract.

The writer's investigation covered the apprenticeship systems in the following factories: Machine factory, Duisburg; the gas-motor and the machine Anstalt-Humboldt factories, Cologne; the Fried. Krupp steel factory, Essen-Ruhr; the Thyssen & Co. factory, Mulheim; the Ludwig Loeve & Co. and A. Borsig, Berlin—all typical of the variety of apprenticeship in existence in Germany.

The State has maintained that under the law it is necessary for factories to continue an apprenticeship, and has even gone so far that at present men must pass masters' examinations to show that they are competent to train apprentices. The type of training, however, varies with the size of the factory, its product, and its organization.

There are several different methods of approach. We have the very highly developed system of the Borsig Co., in Berlin, and the purely shop practice of Thyssen & Co., in Mulheim. In some places the apprenticeship merely consists of boys working during a period of four years in the various departments of the factories under the regular masters of the trade; in others separate sections of the shop, with special groups of machines, are provided for systematic instruction in trade processes; and in other factories, as in the A. Borsig factory of Berlin, are found not only the organization and the separate apprentice shop, but also drafting rooms, lecture rooms, libraries, and

classrooms, which are devoted to systematic theoretical instruction directly related to the trade several hours a week. During this time the apprentice receives the regular rate of pay, which runs as follows:

Year.	Trade.	Rate of pay for apprentices.
		Pfennigs an hour.
First year.....	Machinists and pattern makers.....	7
Second year.....	do.....	10
Third year.....	do.....	13
Fourth year.....	do.....	16

It is interesting to note that the supply of molders' apprentices is much less than the demand and that a higher wage scale is paid to apprentices in this trade, as follows: First year, 10 pfennigs; second year, 13 pfennigs; third year, 16 pfennigs; fourth year, 20 pfennigs. A boy in the fourth year of the German molders' apprenticeship receives about 5 cents an hour; the American apprentice of the equivalent rating receives from 16 to 20 cents an hour.

The pay for mechanics per week averages as follows: Machine trade, 45 to 50 marks (\$10 to \$12); founders' trade, 55 to 60 marks; patternmakers' trade, 50 to 60 marks.

In the third and fourth years of the apprenticeship opportunity is also given for a 10 to 20 per cent increase of wages on a piece-work basis, the apprentices being given about 50 per cent of the journeyman's rating. This has a very beneficial result for the factory in retaining the apprentice employed, although in the Borsig plant only about 11 to 13 per cent of the apprentices remain in the factory employ after the completion of their fourth year of training. This percentage, however, varies with the locality, and in other parts of Germany reaches as high as 66 to 70 per cent, depending greatly on the size of the city and the readiness with which change of employment can be made. Specific and detailed information regarding this condition can be found in the chart herewith and in the report, "Lehrlingsausbildung der Industrie" (Appendix B).

In the Krupp Steel Works, at Essen, there is a complete type of apprenticeship. The apprentices receive their theoretical instruction entirely in the local continuation evening schools. A few years ago, however, the apprenticeship department was organized in an entirely separate building, where about 500 boys regularly apprenticed to the trade received instruction in trade processes only.

The first two years this department cost the works about 30,000 marks; since that time it has not only paid for itself, but has become a source of revenue. Its purpose is to guide boys into the trade which they desire, and to train them specifically for it, so as to produce a more efficient mechanic. The apprentices spend one to two

years in this department, and the remaining years are spent in the regular factory, working in different departments. They are employed in the shop 10 hours a day, 6 days a week, 52 weeks a year, during a period of 3 years. In addition to this they attend continuation school from 6 to 8 o'clock in the evening, 3 evenings per week, 40 weeks a year, during the period of apprenticeship.

Another interesting feature is the daily organization in shop employment, as follows: Shopwork from 6 to 8 a. m.; breakfast from 8 to 8.15 a. m.; shopwork, 8.15 a. m. to 12 m.; dinner, 12 m. to 1.30 p. m.; shopwork from 1.30 to 4 p. m.; lunch, 4 to 4.15 p. m.; shopwork, 4.15 to 6 p. m.; continuation school from 6 to 8 p. m., 3 evenings a week—after which the apprentice is allowed to go to his home for supper.

In the shop organization the boys receive very thorough instruction alternating between different types of machines and doing a great variety of work. Very careful records are kept regarding their physical as well as their mental and productive development, including a record book in which is kept account of even the operations, and number of hours in each operation, which the apprentice has completed.

The output of the shop consists of templates, jigs, fixtures, and general manufactured products, and although the endeavor is to maintain a variety of work still a considerable part of it is repetition, dependent on the regular shop orders.

The entrance requirement to the apprenticeship is that a boy be 14 years of age; no preparatory academic training is required. The continuation school training, the expense of which is borne by the municipality, is supported and approved by the State. The factory also pays the tuition of the apprenticeship at the rate of 10 marks (\$2.50) a year for each individual apprentice.

The rates paid to apprentices in the Krupp Works are as follows: First year about 14 cents a day; second year about 20 to 35 cents a day; third year about 33 to 46 cents a day. This wage, plus piece-work percentage, makes it possible for an apprentice in his third year to earn about 65 cents a day for 10 hours' work. In addition to this, at the end of the apprenticeship each apprentice gets a bonus of about \$40, and if he holds an honor certificate, the company pays for additional advanced school training, which, however, results ultimately in its good.

When the boy first enters the apprenticeship in this company he is placed on a three months' probation. His first training is in chipping and filing of castings. From this he goes to the machine department, where he works on old and obsolete machines. From there he goes for four or five weeks to the forging department, where he learns how to handle the file and to make tools necessary for his

trade. Then he returns to the machine floor and works on good modern machines. At the conclusion of one or two years, according to his efficiency and to factory conditions, he spends the remainder of his time in the regular factory.

The apprenticeship in the Krupp Steel Works partakes greatly of a welfare nature, which is very prominent in all of the Krupp factory organization.<sup>1</sup> They have workmen's homes, dormitories, central stores, club houses, and libraries for the use of the employees. Further, they have special schools for girls where cooking, sewing, and general household economy are taught, so that the girl as she matures, is automatically becoming a more efficient and economical homemaker for the man employed in the works.

The entire system, while beneficial to the individual employee and his family, still makes for the good of the company. The man becomes a more efficient producer, and, during his period of training, he not only maintains the educational expense of the institution, but is also a source of revenue. The girl becomes a more efficient homemaker and is able to provide a better living for her husband who is employed in the works than she otherwise could. These conditions make more satisfied employees and tend toward less and less social unrest and dissatisfaction—results vital for the good of such a productive organization.

#### THE CENTRAL LABOR EXCHANGE, .

Berlin, Germany.

"Verboten" is the watchword of Germany—its greatest meaning is conservation.

Germany, which has to support 60,000,000 people, represents a territory about the size of Texas, while our entire United States has to provide for only 100,000,000 people. This, in itself, means that things which are not economical or saving to the individual ultimately mean a loss to the State. Losses are not economical, and herein does Germany teach a lesson to the entire world.

Our greatest waste is not in the natural resources of material with which we are, as a country, so richly endowed, but in human efficiency—the ability of each one of us to do something in a productive way, and in the lost time that accumulates with the American people in our articulation of it—the ability and proficiency of a person with the opportunity to create or execute something of a productive nature.

The most important "Verboten" in Germany is the drone of humanity—the man without a job. Germany not only forbids any person to be unemployed, but goes further and provides most effectively a means for employment to be obtained.

<sup>1</sup> For indentures of apprenticeship, see Appendix B.



The apex of the pyramid of this organization is found in the central labor exchange of Berlin, under the very efficient direction of Dr. Freund. It is an institution primarily by the people, of the people, but greatest of all for the people. A large building centrally located, without limit as to facilities, is dedicated to this great purpose, and provided for through city appropriations and charitable endowments.

Its purpose is a simple one—to place men and women in fitting employment and to guide, assist, and place boys and girls in occupations adapted to their special physical and intellectual ability.

The institution itself is of a municipal nature, but the director is entirely unhampered by local or petty interests of any sort whatever.

The organization was established about 20 years ago for men and women, but the vocational direction and guidance for boys and girls began only in August, 1913.

Tradespeople patronize it because it provides for their needs. Employers promote it because it is alive and of value. It cooperates with industry and education in the public schools; and is so helpful to needy home conditions that it is popular with the people. It covers all occupations, both skilled and unskilled. For boys and girls a point of contact is established with the general public schools, so that it is compulsory for children to give due notice to teachers before they are permitted to withdraw from school membership. A blank is provided by the teacher covering the necessary information and is immediately forwarded to the central labor bureau. The parents are then notified by the bureau and brought into consultation with an expert, who knows fully and is keenly alive to present conditions in industry. The history of the boy or girl is investigated and the family physician is consulted as to his or her physical adaptability to the occupation which may be open through the expert of the bureau.

Conservation in this case means that the boy and girl are fully acquainted with the special conditions under which they are to be employed, and will be able to withstand fully any physical demands made upon them to meet the requirements of the special occupation which they may enter.

An interesting fact brought to light recently in the city of Bridgeport, Conn., through the State employment agent, Mr. Hall, was that a very large percentage of juvenile industrial workers did not even know where the factory was located in which they were to enter upon an occupation, much less the conditions under which they were to be employed. A conference with Mr. Goodrich, of the Bryant Electric Co., in the same city showed that his greatest loss in manufacturing was due to the falling out of employees who found, after a week or a month of trial, that they were not fitted to their employment; consequently the foreman had to "break in new help," which always entails a great loss in the cost of production.

This condition is entirely alleviated in the case of the German system. Adults are segregated according to sex, occupations, and trades. A large portion of the building is devoted to women's work, another large portion to apprentices, the remainder to the needs of the men, thus affording all a central clearing house for employment in their respective occupational pursuits.

The women's quarters are divided as follows: Laundry workers, cooks, general house workers, charwomen, and the like.

Reservations are provided for men on the basis of their trades such as bricklayers, machinists, carpenters, textile workers, and electricians.

They meet in a large assembly hall which is conveniently located to the entrance, with the employment offices in immediate touch with this central assembly hall. A man seeking employment enters the building and registers as being open for another position, first showing his "character book" to the clerk in charge. In this book is a certified statement from the previous employer of the bearer, who has to be identified, stating the reason for his finishing employment, together with a statement of satisfaction rendered. This eliminates the opportunity of a man becoming "undesirable" and causing an economic loss by shifting from one employer to another. After registration the man enters the large assembly hall, which impresses one more as a club room than a feature of any employment bureau (which in this country exists mainly in name), and here the man finds his friends who are grouped according to comradeship. Smoking is allowed, and a buffet at one side of the room offers opportunity for the purchase of tobacco, cigars, beer, and lunch at the following prices: Cigars, 1 cent; half liter of beer, 2 cents; good wholesome sandwiches of all sorts, varying from 1 to 2 cents apiece.

The social spirit is not neglected, and the men are treated from a humanitarian viewpoint of social life. Next to the buffet is a room in which a tailor is provided for pressing, cleaning, and mending the clothes of the workmen at a nominal cost. Next to him is a cobbler shop where shoes may be mended. A dispensary room is provided, and medical needs are attended to by the physician in charge. A special restaurant and lounging room is also a part of the facilities whereby a club spirit is encouraged. In addition to this a very extensive bath system is also provided in which all facilities for bathing are to be had at a very nominal fee.

Factories wishing employees obtain them through the bureau; persons seeking employment obtain it through the bureau; the bureau itself has become a central clearing house of labor, providing and guiding the social interests of the workmen, obtaining occupations suited to their efficiency, regulating the moral standard of the people, insuring to the employer that he would obtain the best service available, and providing the needy man, woman, boy, or girl with proper employment.

**THE HAND WORKERS' TRADE SCHOOL,****Augsburg, Germany.**

The Hand Workers' Trade School, of Augsburg, is very important, as it represents in its 9 hours a day, 6 days a week, and 40 weeks a year, for a period of 3 years, one of the most recent and important developments of trade education in Germany.

The importance of the Augsburg school lies in the fact that it represents a beginning in Germany of the all-day preapprentice trade school, such as has been so successfully worked out in the State of Connecticut during the last few years.

The Augsburg school was established in 1905, and is now occupying a new building, which was completed within the last year. The monetary provision comes from the city, the State, and tuition. The purpose of the school is threefold: (1) To teach a trade fully; (2) to provide continuation school shop training for apprentices already employed; (3) to give advanced day and evening training to mechanics who have already completed their apprenticeship and are endeavoring to attain promotion.

One significant feature is that the apprentices go out from this school as finished journeymen.

The general organization is under the supervision of the superintendent of schools, subject to the approval of the State. The active direction is of a very unique feature, the director being a local architect employed on a part-time basis.

The morning session is from 7 to 12 o'clock, the afternoon from 2 to 6 o'clock, for a period of 3 years; entrance requirements, 13 years of age and approximately the completion of the equivalent of the American eighth grade.

Daily instruction is arranged as follows, and all studies are closely related: Shop work, 5 hours in the morning; applied drawing, 2 hours in the afternoon; science, German, civil government, mechanics, and physical exercise, 2 hours.

The trades taught are the following: Carpentering, general wood working, iron smithing, tin smithing, machine-shop practice.

In the main the product consists generally of school equipment, although the policy of the school has already developed into a beginning on commercially productive work or salable articles. The standard of workmanship is of a uniquely excellent nature and most of the products are sold to the public at exhibitions and sales held during the year, the money received being applied directly to the cost of the maintenance of the school. Prices for the products are rated approximately at the regular market valuation.

Augsburg is one of the oldest cities of Germany and has a population of about 100,000. The school has a large number of continuation

and evening school students; the day attendance may be estimated at about 150 pupils.

The spirit of the work is excellent; the students and teachers are greatly interested; the director is a business man rather than a school-teacher, and is occupied regularly in his profession of architect.

The importance of this school can not be overestimated. It is regarded by German experts as a significant national experiment in an entirely new development of German trade education.

#### IV. AUSTRIA.

##### CONTINUATION SCHOOL,

Vienna, Austria.

The general system in Vienna is practically the same as that of Munich, the Munich schools having been developed to a considerable extent out of the experience of the Austrian work.

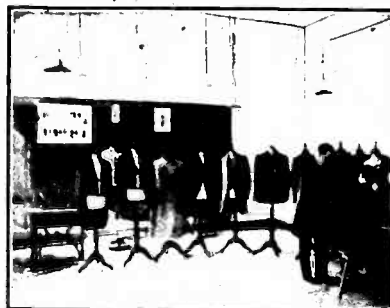
One feature of the Viennese situation is the recent completion of a very large central building, which has an enrollment of 7,500 students. The instruction, with the exception of watchmaking, is that of the regular continuation school, in which the students attend from a great variety of trades during 8 to 12 hours a week, the instruction being based on shop practice in the trade as well as on related academic studies.

The significance of this exceptionally large central building is that the organization is of such great magnitude that it is unwieldy both from an executive and a supervisory point of view, as well as from that of attendance, apprentices having to cover too great a distance between the place of their actual employment and the place of instruction. It is much more satisfactory to have not quite so large a plant, as in Munich, and to have a distribution in different sections of the city nearer the places of occupation of those attending.

The school is open 6 days a week and 10 months a year; the instruction covers a period of 4 years and is compulsory. This compulsion extends to girls in home-making courses as well as to boys in apprenticeship. The girls attend for instruction in household arts in the same building with the boys.

In connection with this school and established only a little more than 2 years ago is a special shop given up to instruction in watch and clock making. This shop represents the regular preapprentice trade school, instruction being offered 8 hours a day, 6 days a week, 10 months a year for a period of 4 years.

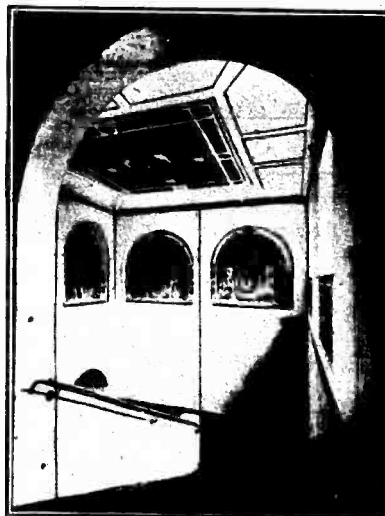
The school is maintained by city appropriations, State aid, and donations from what we would call the chamber of commerce, and



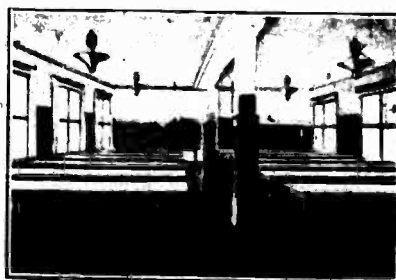
A. GERMAN CONTINUATION SCHOOL FOR TAILORS.



B. SCHOOL FOR BUTCHERS AT  
SLAUGHTER HOUSE.



C. ENTRANCE TO A CONTINUATION  
SCHOOL.

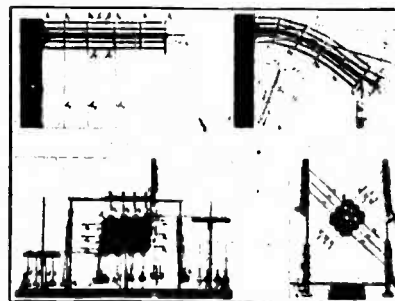
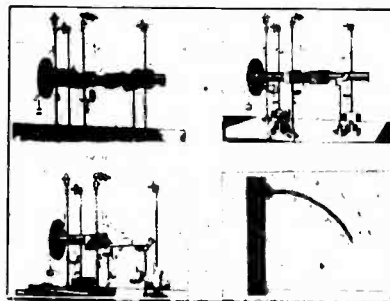
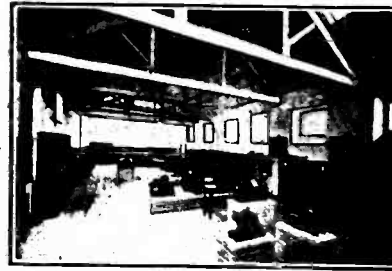
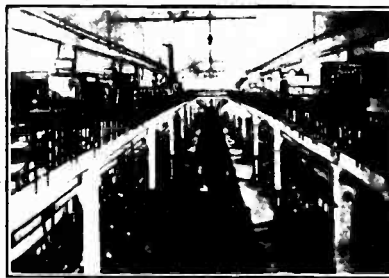
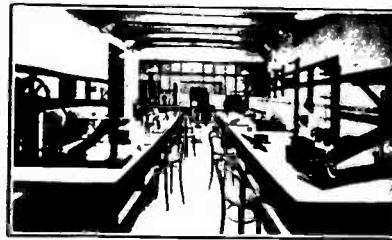


D. APPRENTICE INSTRUCTION ROOMS IN SEPARATE FACTORY, BERLIN, GERMANY.



BUREAU OF EDUCATION

BULLETIN, 1914, NO. 23 PLATE 9



BUILDING, LABORATORIES, AND SCIENCE APPARATUS FOR TECHNICAL INSTRUCTION  
IN THE GERMAN SYSTEM.

is operated by the city and regulated by State approval under the ministry of labor and trades.

The training in shop practice consists of exercise work and school equipment. Barbers, however, are trained by working upon either very poor people or other apprentices. In the blacksmithing department horses are brought in and shod. No money is received for any work done, but credit is given to the school for providing equipment. This product, however, considering the nature of the instruction, is practically negligible.

Very little can be said about the watch and clock making as it represents an experiment in preapprentice trade-school work, and has not been established long enough to show any results except that the plan is to complete the apprenticeship. One condition, however, which is at present confronting the school is that the storerooms are already filled with practice work; the authorities feel that they must come eventually to marketable production:

The entrance requirements are that all apprentices be 14 years of age or in the regular apprenticeship. Instruction is offered in 37 different trades in the continuation school department.

The academic work consists of applied drawing, mathematics, science—industrial physics, chemistry, mechanics—nature of material, civil government.

Vienna also has a higher system of technical education, as has Germany, for foremen and superintendents of factories, which fits men to be factory employees with a technical education rather than ordinary tradesmen.

A great deal of credit is due the Viennese educational situation, as much of the development and growth of industrial education has emanated from the initiative there.

## V. BELGIUM.

### ÉCOLE PROFESSIONNELLE DE MECANIQUE,

Liege, Belgium.

The Trade School for Mechanics, founded in 1902, was established for the specific purpose of covering the apprenticeship in the trades taught. It is under the direction of the city, province, and State, being paid for by each to the extent of about one-third.

The apprenticeship in the locality exists, but the trades have become so highly specialized that it is impossible for a boy to receive an all-round training. The school, however, covers this field, so that when a boy graduates, and has successfully completed a few months time in the actual trade, he is recognized as a full journeyman.

The general attitude of the public tradesman and school people is that this institution is accepted as an established feature of the public educational system. In all there are about 500 apprentices in the machine and pattern-makers trade. The school runs 8 hours a day, 6 days a week, and 46 weeks a year during a period of 3 years, one-half of the day being devoted to the study of applied mathematics, science, and drawing, the other half being devoted to shop practice.

An apprentice entering devotes his entire time to the study of one or the other of these trades, rather than alternating between them.

The entrance requirements are that a boy be from 12 to 16 years of age and a resident of the province of Liege. He must be of good physique, pass an entrance examination in language and mathematics, and have completed the first six years of elementary school.

The trade instruction is mainly on a finished product which is used for school equipment, although some time is devoted to exercise work and much time to model work for exhibition purposes, especially in pattern making. There are no sales made of the production, but a very close relation exists between the shop practice, drawing, and mathematics. Further, a complete record of all work in process is kept in job-ticket form as follows:

Liege. Date.....  
 School.....  
 Section..... No.....  
 Year of apprenticeship.....; age..... years.

#### JOB TICKET.

Name of apprentice.....  
 Article.....  
 Date of order.....  
 Date of delivery.....  
 Journeyman's time.....  
 Actual hours of apprenticeship.....  
 Valuation by the student of the progress in percentage.....  
 Inferior..... Superior.....  
 If the wages of a workman are five francs, my wage would be approximately.....

Date.	Number of hours.	Date.	Number of hours.	Date.	Number of hours.
1	.....	11	.....	21	.....
2	.....	12	.....	22	.....
3	.....	13	.....	23	.....
4	.....	14	.....	24	.....
5	.....	15	.....	25	.....
6	.....	16	.....	26	.....
7	.....	17	.....	27	.....
8	.....	18	.....	28	.....
9	.....	19	.....	29	.....
10	.....	20	.....	30	.....
				31	.....

Foreman..... Director.....

**NOTE.**—The sketch of the piece is on the back of the card, and under no condition is the foreman to permit the apprentice to work without the plan drawn.

As the work progresses the apprentice is required to keep a strict account of it under the supervision of the foreman. No attention is paid to the cost of material. On the back of the job ticket, pencil sketches are made of the work in process. One job happened to consist of a machine appliance which required several parts. Each part was then assigned to an individual apprentice and illustrated on an individual job ticket. The drawings, however, were hardly what we would call commercial, as too much time was devoted to shading and artistic effects for trade requirements. Measurements, however, differ from ours in that universal use is made of the metric system.

The school is housed in a building which for several centuries was used as a convent, being originally built for that purpose. Naturally the layout is poorly adapted to school needs, but a very excellent organization exists there nevertheless. At first this building was rented; later it was purchased by the city.

Another very unique feature in connection with this school is the noon luncheon, which is given entirely free to the apprentices. It consists of a very substantial dinner. The menu changes each day and is composed of good wholesome soup, potatoes, vegetables, bread, a mug of beer, meat added on certain days; fish and eggs are also served. Very important results are attributed to the influence of this luncheon on the health and studies, the application and conduct of the apprentices.

#### GUNMAKERS' SCHOOL,

Liege, Belgium.

The Gunmakers' School represents an organization which was originally established by manufacturers, but is now administered by a committee of that body in conjunction with city officials. Its purpose is to make fully rounded-out mechanics specialized in the gunmakers' trade. This is due to the locality being a large gun-making center, the Fabrique Nationale or National Factory for Gunmaking being located here.

The monetary provision consists of 78,000 francs annually and is provided from private donations, city, Province, and State, about one-fourth each.

Instruction is somewhat specialized, depending on the part of the gunmaking that the apprentices desire to follow. When the pupils graduate they are classed as finished workmen, and are so recognized by the manufacturers and the labor organizations. A great deal of this standing, however, depends upon the actual ability of the individual. The relation of the school to tradespeople, employers, and citizens is generally most excellent, all being interested in its development as a municipal institution.

The course of instruction covers 6½ hours a day in winter, 7 hours in summer, 6 days a week, 11 months a year, during a period of 3 years, with the privilege of a post-graduate course of 1 year for class proficiency. Vacation is held during the month of July.

The academic studies consist of arithmetic, algebra, geometry, drafting.

About 10 to 12 hours per week are devoted to these studies.

An evening course consisting entirely of related academic training includes the study of industrial history of firearms, powders and their composition, manufacture of steel and iron, mathematics, and other related subjects.

This course is given 1½ hours a night, 3 nights a week, 11 weeks a year, during a period of 3 years. There are no other departments of instruction.

There are about 250 apprentices in attendance during the day; the evening attendance is comparatively small.

A tuition fee is charged in this school for the entire period, but is refunded upon graduation.

The entrance requirements are that students be 13 years of age, and have finished 6 years of elementary school training. The product of the shops is both for practice and for sale. Some of the parts are sold to the factory, the selling price being fixed by the purchasers, 25 per cent of the sales going to the apprentices. The entire amount, however, is practically negligible in its application to the maintenance of the department.

The equipment in both machines and hand tools is of a very simple nature, and some apparatus as well as some processes are entirely inadequate and obsolete, judged by American standards of factory production.

The policy of the school is under the guidance of an advisory board composed of manufacturers, labor men, and representatives of the city, Province, and State.

A visitation to the large factories where the boys find employment showed that the shop organization is of such a specialized nature that it is impossible for a boy to learn a trade in actual employment. In some cases work is let out to home centers, while a very significant condition is that women work at a wage of 2 to 3 francs a day as machinists operating milling machines and similar equipment.

### ÉCOLE PROFESSIONNELLE DES FEMMES,

#### Brussels.

The Brussels Trade School for Girls was established in 1865, with a total membership of 137 students. It now has an attendance of about 400. It is primarily a day trade school for girls, teaching



garment making, lingerie work, flower making, dressmaking, china painting, and covering the trades adapted to girls employed in the city.

Formerly the trade of lace making was taught, but this was eventually discontinued, as the number of students electing the course gradually declined and ceased altogether. It was found upon investigation that lace-making was mainly a home occupation for leisure time, and that the income from such work as a specific trade was not remunerative enough for an occupation, and, further, that as home work the product was differentiated in kind according to the locality and that the teaching was entirely traditional. In this way it has become a highly specialized occupation, impossible to centralize in the factory organization.

The school is open from 9 to 12 a. m. and 2 to 4.30 p. m., 6 days a week, 42 weeks a year, during a period of from 3 to 4 years.

Students are admitted at not less than 12 years of age, and only girls are permitted to attend.

The academic studies consist of language, applied mathematics and bookkeeping, history, geography, physiology and hygiene, designing, gymnastics, and literary training.

The product of the school is entirely commercial, and the proceeds revert to the cost of maintenance of the school.

The general policy of the organization is under the guidance of a local advisory council, which is mainly composed of tradespeople. Appropriations for maintenance are made up, as in this country, into a budget which is submitted annually to the local governing body and is passed upon by them before the 1st of July of each year. It must also be approved by the minister of industry and labor. Considerable money is also received from private subscriptions, and at the end of each year the city is reimbursed to a degree by the State.

### ÉCOLE PROFESSIONNELLE DE MENUISERIE,

Liege, Belgium.

The Trade School for Carpenters is a day school for the training of carpenters. It has the same organization as the Trade School for Girls in its relation to direction and monetary provision. In Liege, however, the policy seems to be to maintain separate schools for different trades.

This one is entirely given up to instruction in woodworking. In the first year it operates 7½ hours a day, 1½ hours being given to applied drawing and mathematics. In the third and fourth years 7 hours a day are devoted to shop practice, and 1 hour to the same studies. It operates 6 days a week, 50 weeks a year, and there are 15 days of holiday granted outside of regular holidays.

The entrance requirements are that an applicant must be 13 years of age and have completed 6 years of elementary school. The entire instruction, however, is devoted to carpentry. The shop instruction is given entirely on exercise projects on small models of roof framing, cabinetmaking, etc., with great emphasis laid on related mathematics and drafting.

The general guidance of this school is under the direction of an advisory board made up of the following members: Four from the chamber of commerce, 2 tradesmen, 1 representing the Government, 1 representing the Province, 1 representing the city. This commission, however, in addition to being an advisory board, has administrative powers.

The cost of conducting this school annually is 74,000 francs, raised by a general city tax. The attendance amounts to approximately 80 to 90 day students and about 100 evening students.

### ÉCOLE INDUSTRIELLE,

#### Brussels.

The Industrial School of Brussels, founded in 1880, is mainly a continuation school, which has, however, developed into a regular day-trade school also in the teaching of machine precision and of the tailoring trade. The apprenticeship in these trades declined to such a degree that the development of the preapprentice training became necessary.

The plan of the school is to cover as much of the apprenticeship as possible, so that the graduates will have only a short period of time to serve before becoming full journeymen.

The school is housed in buildings which were originally erected for other purposes.

In organization it went through the usual initial experience of having its worth questioned—as many of our American schools have done. At present, however, it is regarded as an established institution. The maintenance and supervision of the department comes under the State, which pays for two-fifths, the city, which pays for two-fifths, and the Province, which pays for one-fifth.

The tailor and the machine trade departments operate 8½ hours a day, 6 days a week, and 49 weeks a year, during a period of 4 years in the tailoring trade and of 3 years in the machine trade.

The academic instruction covers the usual minor allotment of time, and in this school consists of drafting and applied mathematics.

The entrance requirements are that all students be at least 14 years of age and hold a diploma for the completion of primary instruction.

The trade operations are mainly carried on, especially in the tailoring trade, through a commercial product. The order is taken in from the trade and is paid for at the market-price. The work is obtained mostly from master tailors who sublet contracts to the school. In the machine trade, however, a great deal of the work is either exercise or exhibit work. Students are employed in a very fine branch of production and make transits, taximeters, galvanometers, and microscopes, which require a very high degree of mechanical proficiency in the trade.

The school is open mainly for evening and continuation school training. The evening school is designed to cover chiefly the trades of the locality, with emphasis on the theoretical, constructive, and art instruction. The continuation department operates mainly as a standard continuation school and on the same basis. A very interesting feature of this training is that instruction is offered from 9 to 12 a. m. Sunday mornings. Mechanics attend church service before 9 o'clock and attend school for the full 3 hours.

Courses are offered in a great variety of trades with a large membership. The origin of the Sunday school was the difficulty that mechanics met with in endeavoring to acquire a technical training in their trade. In their occupation it was necessary for them to be employed 9 to 10 hours a day, which made it impossible for many to take advantage of the evening instruction. The Sunday morning department was opened as a result of this condition, and has proved highly profitable.

## VI. SWITZERLAND.

### METAL WORKERS' SCHOOL,

Winterthur, Switzerland.

This school was founded in 1888 by the city board of education of Winterthur in response to a pressing local industrial need with an annual monetary provision of about 75,000 francs.

This institution represents what we call in America the full day trade or preapprentice school. It operates 9 hours a day, 6 days a week, 49 weeks a year for a period of 3 years.

Instruction is offered in the following trades with an enrollment as noted: Machine shop, 70; smithing, 27; pattern making, 10; precision work, 27; total, 134.

The academic studies are as follows: Drawing (applied, illustrative); mathematics (business accounts, technical arithmetic, algebra, geometry); science (applied physics); mechanics (composition of

metals); language. All subjects are related to industrial interests and studies are differentiated according to the chosen trade pursuit. Shopwork is offered 34 to 36 hours a week and academic work 18 to 20 hours per week.

The purpose of the school is to cover the apprenticeship before the students enter the trade. It is safe to state that this is fully accomplished, as the school keeps in close touch with the apprenticeship requirements of the shops of the Gebrüder Sulzer, which have an extremely highly developed and well-organized apprenticeship.

Trades unions have no objection to this school, employers promote it, and the general public is in favor of it. The State exercises supervision and control, but it is a part of the regular public-school system. Instruction is offered only in day-school work, there being no evening school or continuation department.

The control of the school is under an advisory board, which is composed of manufacturers, master employers, and general industrial men. The operation is under the direction of the board of education, with whom the special school board advises.

The entrance requirements are that students be at least 15 years of age, and have completed the equivalent of the ordinary eighth grade in the United States. At present the school is in such great demand and the facilities are so inadequate that appointment must be made on competitive examination.

Tuition is charged at the rate of 50 francs (\$10) a year for the Swiss, and foreigners are charged double that amount. Special courses are offered for periods of 1 year or less at rates of 100 to 300 francs a year, depending on the amount of time. For these courses also foreigners are required to pay double, and they are only admitted if there is room for them.

The product at present consists entirely of commercial work which is made for the Government on regular bids and is also sold to factories at the market price. The significance of this feature is that, like many American schools, this school originally began by making its own equipment; ultimately, however, a limit was reached in this regard, and the school was forced into marketable production.

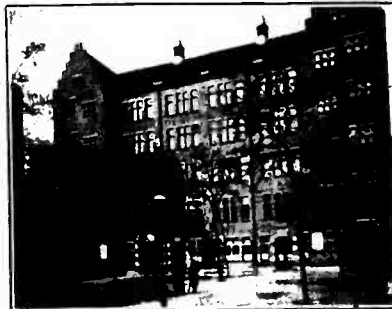
The product in the various trades is as follows: Machine shop—regular machine tools; smithing—decorative grills, wrought-iron doors, lamps, door handles and hinges, andirons and ornaments of various sorts, pattern making, models for machines; precision work—scales, balances, microscopes, science apparatus, telephone boxes, electrical measuring instruments, taximeters. The income from the product is considerable, amounting to about two-thirds of the cost of the annual maintenance, or \$10,000 to \$12,000 a year.

BUREAU OF EDUCATION

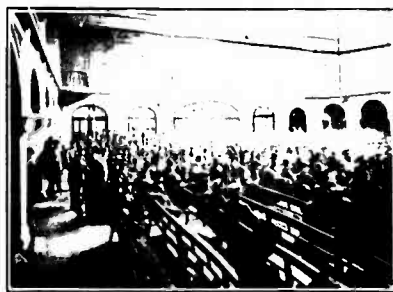
BULLETIN, 1914, NO. 23 PLATE 10



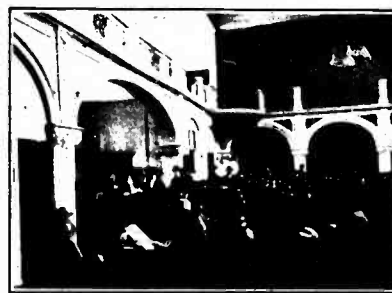
ENTRANCE TO MEN'S BUILDING.



WOMEN'S DEPARTMENT, REAR VIEW.



GENERAL ASSEMBLY FOR MEN'S  
TRADES.



LUNCH COUNTER AND GENERAL AS-  
SEMBLY FOR MEN.



REGISTERING FOR POSITIONS.



GENERAL ASSEMBLY FOR WOMEN'S  
TRADES.

CENTRAL LABOR EXCHANGE, BERLIN, GERMANY.



A very interesting feature in this school is that the students are actually paid money for their services, and herein American schools may learn a very valuable lesson. During the first and second years the apprentices are kept on regular day work which, as stated before, is made for the market. In the third year, however, they are put on a piece-work basis, with a journeyman rating as follows: When an order is received, the drawings are all made and all parts numbered. The foreman then assigns the parts to different boys and ascertains the time and earnings of a journeyman workman on the assignment. He then makes a general estimate of each boy's ability, and gives him one and one-half or twice the time of the journeyman to do the work in. If the apprentice meets this estimate, he is then given 7 per cent of what would actually be paid to the actual workman. If the apprentice falls below the time, then he is given a proportionate amount of the 7 per cent. This constitutes what could be well called an efficiency rating system. The various amounts are then reported to the school office, recorded, and entered to each boy's credit, so that when he completes his time he is given a check for the full amount by the director of the school. This gives him a chance to buy an outfit of tools and enables him to pay the expenses of obtaining his first position. On the other hand, if he fails to complete his time, then the money reverts to the school and the boy receives none of it.

This system of earnings has been found to be a very important influence in encouraging the apprentices and retaining them in the school, as almost the whole number of those who enter finish their course.

Another interesting feature of this school, and one peculiar to it, is the pensioning of employees. If they must discontinue work because of becoming in any way incapacitated for it through injury in the shop, they are pensioned on 60 per cent of their wages when injured. A system of insurance also is established whereby in case of sickness the employees receive a percentage of their wages, depending on their length of service. This benefit, however, is not provided on the basis of the regular pension fund which exists in some States in this country and which is supported from the salaries of teachers, but is paid directly from the city funds.

This school in Winterthur was one of the best of all the institutions studied. The spirit on the part of the apprentices was most excellent; the attitude was that of genuine interest. The entire organization was of a constructive, related, and cooperative nature.

## VII. ITALY.

### CASANOVA INSTITUTE,

Naples, Italy.

A very valuable lesson can be learned from this trade school in Naples, the Casanova Institute, in its method of training mechanics. It is the outcome, to a large degree, of philanthropy, having been founded in 1869 by Alexandro Casanova and an association of benefactors. At present, however, it receives its funds from city, State, and public contributions.

The school operates for all students over 12 years of age 10 hours a day, 6 days a week, 52 weeks a year, for a period of 4 years. Students enter from 7 years of age up—no matter how long they have been in school. Six hours a day are given to academic training, and the remaining 4 hours to shop instruction for those over 12 years of age.

It is unnecessary to go into the details of the organization, as it is of a nature very similar to other trade schools already described, except that a greater amount of time is devoted to related art instruction.

The one very important feature of this institution is its trade-instruction organization and relation of the trade shops to the school. This consists of cooperation between the educational authorities and local retailers and merchant manufacturers.

The school itself is housed in an old monastery which was confiscated by the Government and offers very adequate facilities for school instruction. The court contains the shops, which are in reality the actual factories of the merchants before mentioned.

The school is under the control of the educational authorities, with a man acting as principal in charge of the academic education. The shops are owned by different individuals who maintain them as unit factories with regular journeymen employed on a productive basis. Instead of a man employing several journeymen in his own factory and apprenticing several boys to them, the State furnishes a building and floor space and permits the man to run his factory as a separate unit from the school. Every day, after the six hours of academic training are completed, the apprentices spend the remaining four hours of the day in the trade shop to which they are apprenticed, working under regular trade conditions and under the instruction of journeymen.

The great danger in such an organization is that the owner of the shop is likely to lose sight of the broader idea of training a mechanic, and to think only of his product, thus leaving the apprentice open to a dangerous amount of exploitation.

## APPENDIX A.

### LONDON & NORTHWESTERN RAILWAY.

Conditions on which apprentices are admitted into the company's engine works at Crewe, England.

Apprentices are taken at the locomotive works, as vacancies arise, to the trades of engine fitting and turning, but are not admitted into the drawing office. They are not bound by indenture, but serve until they are 21 years of age. If a youth is over 18 years of age when he commences his apprenticeship he must serve three years. No application should be made on behalf of any youth who is not of sound constitution, and is unable to see without the aid of glasses, as otherwise he would not be able to carry out satisfactorily the obligations specified in this memorandum. The admission of apprentices is subject to their passing an examination by the company's medical officer at Crewe. Youths are not taken before they are 16 years of age, nor when over 19 years of age.

Apprentices are subject to the rules and regulations in force as to the management of the workshops in which they may be employed; they are liable to dismissal at any time if they fail to keep good time or otherwise misconduct themselves.

Before any youth is accepted as an apprentice he will be employed in the workshops on trial for one month, and during this period he will be required to commence work at 6 a. m. and to work the ordinary hours of duty. At the expiration of the trial month, if his conduct and ability are found to be satisfactory, a premium of £60 has to be paid to the company, and under no circumstances is any portion of this sum afterwards refunded.

During the trial month it is desired that the probationer will make himself thoroughly familiar with these regulations, and if at the end of the month he is not satisfied with the conditions laid down, or if he has any doubt of his ability to comply strictly with the requirements specified, his application to be entered as an apprentice should be withdrawn.

Apprentices who complete satisfactorily the full time of apprenticeship will at the end of the term receive a certificate stating their ability and general character. A record of any time that may have been lost during the apprenticeship will be entered on this certificate in the following form:

*Record of time lost during apprenticeship.*

Year ended—	Hours works open.	Hours worked.	Time lost (hours)					Total.
			Special leave.	Ill- ness.	With- out leave.	Acci- dent.	Suspended from duty.	
Total for years...								

The rates of wages paid to apprentices are as follows: 4 shillings per week at the commencement, advances being made twice in each year, if their conduct and ability merit such advances, until a maximum of 15 shillings per week is attained.

The ordinary hours of work are as follows, but are subject to alteration:

*Monday to Friday.*—6 to 8.15 a. m.; 9 a. m. to 1 p. m.; and 2 to 5.30 p. m.

*Saturday.*—6 to 8.15 a. m.; 9 a. m. to 12 noon.

All apprentices are required to commence work punctually at 6 a. m., and to make, as a rule, full time of 54 hours during the week. Great importance is attached to regular and punctual attendance.

The usual works holidays are as follows: Easter, 2 or 3 days; September, 2 days; annual works holidays, about July, 7 days; Christmas, 7 days.

The holidays may be extended by one week at Christmas and at the annual works holiday, but no extension of leave beyond this will be allowed unless special written application is made by the parents or guardians, and such application should only be made under exceptional circumstances.

Every applicant for apprenticeship must produce a certificate of registration of birth, also a medical certificate of his suitability for following the employment, and it must be distinctly understood that employment is not guaranteed after completion of apprenticeship.

C. J. B. COOKE.

CHIEF MECHANICAL ENGINEER'S OFFICE,  
CREWE,

.....191....

APPLICATION FOR APPRENTICESHIP AT THE L. & N. W. R. LOCOMOTIVE  
WORKS, CREWE, ENGLAND.

Name in full.....

Date of birth (*see conditions*).....

Father's or guardian's name and address.....

Schools in which educated (specify time in each and date of leaving school).....

I have read the annexed conditions under which apprentices are employed at the Crewe Works, and if accepted as an apprentice I agree to conform to the regulations in all respects.

.....  
*Signature of Applicant.*

I desire that my son ..... should become an apprentice to the engine fitting and turning at the L. & N. W. R. Works, Crewe, under the terms and regulations specified, which I accept.

.....  
*Signature of Father or Guardian.*

Date ..... 191-.

CERTIFICATE OF GOOD CONDUCT FROM SCHOOL OR COLLEGE.

.....  
*Head Master.*

Fill in the name and cross out the word "son" if it does not apply.

MEDICAL CERTIFICATE.<sup>1</sup>

How long have you known the youth ..... (insert name) referred to in the above application? .....

Are his sight (without spectacles) and hearing good? .....

Has he suffered from rupture, fits, or any physical infirmity or weakness? .....

Has he suffered from any affection of the lungs or heart or another disease affecting his present constitution or physical strength? .....

Is it in your opinion (1) at all probable that employment in engineering workshops of somewhat laborious character, commencing (a) ..... each day at 6 a. m. will prejudicially affect his health, or (2) do you consider that his physical health and strength are such as to (b) ..... qualify him for such employment? .....

(Signed) .....

*Please return this sheet only.*

## APPENDIX B.

## A GERMAN APPRENTICE CONTRACT.

The following apprentice contract is executed between the firm of Friedrich Krupp, stock company in Essen on the Ruhr, and (apprentice's name), born at (place of birth), to (name of parents), accompanied by his (parent or guardian, and name) as his legal representative.<sup>2</sup>

SECTION 1.—The company accepts (apprentice's name) as apprentice for its cast-steel factory and obligates itself to have him trained as a (trade or branch in which apprenticed) under the direction of a suitable representative. The apprentice is subject to the fatherly authority of the representative.

SEC. 2.—The apprentice is pledged to obedience and truth, to industry and proper conduct.

He must regularly attend, under the direction of the firm, an improvement school, and present the certificate there obtained, immediately on its receipt, to the official set over him.

SEC. 3.—The apprentice must provide for his own support and for all other things necessary, with the exception of tools required for his work.

He shall receive from the day of his entrance on apprenticeship<sup>3</sup> pay for each working day, which shall depend on his conduct, ability, and efficiency, according to the following scheme:

*Daily pay of apprentices.*

Age of entrance.	Year of apprenticeship.		
	First.	Second.	Third.
Between 14 and 15 years.....	Marks. 0.50-0.70	Marks. 0.80-1.00	Marks. 1.10-1.30
Between 15 and 16 years.....	70-90	1.00-1.20	1.40-1.60

<sup>1</sup> To be filled up where possible by the ordinary medical attendant of the family.<sup>2</sup> A guardian, to execute an apprentice contract, must receive the approval of the guardianship court.<sup>3</sup> Before entering on apprenticeship in the Krupp works, a boy must first serve a year as errand boy or in similar capacity.



Qualified apprentices may be allowed to undertake piecework in their third year, and for this receive up to 50 pfennigs a day in excess of their daily wage.

No subtraction from the wage of the apprentice shall be made for the working hours in which he attends improvement school.

SEC. 4.—The apprenticeship begins with the (date) and lasts 3 years. Workdays in which the apprentice has neglected (his work) shall not be included in the reckoning of the length of apprenticeship, but so much more must be added. With good conduct and efficiency, the repetition of neglected days to a maximum of 25 may be remitted.

SEC. 5.—The first 3 months of the apprenticeship are a period of probation, during which either party may withdraw from the apprentice contract.

After the completion of the probation period the company is authorized to discharge the apprentice at once before the ending of the contractual time in the cases stated in section 123 of the National Industrial Law (see supplement) or when he has repeatedly violated his duties of obedience and truth, industry and proper conduct, or neglected his attendance on improvement or trade school. (Sec. 2.)

SEC. 6.—On the part of the apprentice, the apprenticeship may be ended in the cases of section 124, numbers 1, 3, 4, and 5 of the National Industrial Law, and also if the company neglects its legal duties toward the apprentice in a manner dangerous to his health, his morals, or his training, or misuses the right of fatherly authority, or becomes unable to fulfill its contractual duties.

SEC. 7.—On the close of the apprenticeship a certificate shall be given to the apprentice concerning the length of the apprenticeship and the knowledge and skill acquired during it, as well as concerning his conduct. An apprentice letter (Lehrbrief) shall be given only when the contractual period of apprenticeship has been completed or shortened with approval of the firm.

SEC. 8.—The company reserves to itself the right, after the regular completion of the apprenticeship, to present to the apprentice a bonus not to exceed 150 marks, providing said apprentice's behavior and services have met the approval of the official in charge.

The company shall decide whether the payment is to be refused wholly or in part, and whether it is to be made to the apprentice himself or to his legal representative.

SEC. 9.—Subject to the provisions of this contract, the apprentice is subject to all regulations for the workers of the cast-steel factory, especially the work regulations.

For other matters, so far as there are no regulations in the present contract, the provisions of the National Industrial Law apply.

SEC. 10.—Apprentices who remain at the steel factory after the close of their apprenticeship shall, on continued good conduct and efficiency, so far as possible, be given opportunity to train themselves further and to progress.

Essen/Ruhr, the (date)

(Signature of the apprentice.)

(Signature of the legal representative.)

Fried. Krupp  
Aktiengesellschaft.  
Das Direktorium.

#### APPENDIX.

Section 123 of the Trades Regulations (see sec. 5 of the article of indenture) reads:  
Before the completion of the time contracted for and without notice, journeymen and apprentices may be dismissed:

1. If in making the contract they have deceived the employer by presenting incorrect or forged workmen's books or certificates, or have misled him in regard to the existence of another contract binding upon them at this time;

2. If they are guilty of theft, embezzlement, fraud, or deception, or of loose living;
3. If they have left their work without authority, or in other respects refuse obstinately to meet the obligations incumbent upon them according to the contract;
4. If, in spite of being warned, they go about carelessly with fire and light;
5. If they are guilty of acts of gross insults against the employer or his representatives or against the members of his family or of those of his representatives;
6. If they are guilty of an intentional or unlawful injury to property to the loss of the employer or a fellow employee;
7. If they lead members of the employer's family, or his representatives, or their fellow workmen to actions that are contrary to law or good morals, or, if with members of the employer's family or of his representatives, they are guilty of such actions;
8. If they are incapable of continuing their work, or are stricken with loathsome disease.

In the cases mentioned under numbers 1 to 7, the dismissal is no longer allowable if the facts upon which it is conditioned have been known to the employer longer than one week.

What claim for damages an apprentice dismissed under the cases mentioned in number 8 may have, must be determined according to the contents of the contract and the general legal regulations.

Sec. 124 of the Trades Regulations (see sec. 6 of the articles of indenture) reads:

Before the completion of the time contracted for and without notice, journeymen and apprentices may leave their work:

1. If they are incapable of continuing the work;
2. If the employer or his representatives are guilty of acts or gross insults against the workmen or the members of their families;
3. If the employer or his representatives or the members of their families lead, or attempt to lead, the workmen or the members of their families to actions that are unlawful or against good morals, or if they commit such actions with the workmen's families;
4. If the employer does not pay the workmen the wages due in the manner stipulated, if in case of piecework he does not arrange for their sufficient employment, or if he is guilty of illegal overreaching (fraud);
5. If, in continuing the work, the life or the health of the workmen would be exposed to demonstrable danger, which was not to be seen when the contract was entered into.

In the cases mentioned under numbers 2 and 3, the leaving of work is no longer allowable if the facts upon which it is based have been known to the workman longer than one week.

## APPENDIX C.

### GERMAN APPRENTICE-TRAINING AND FACTORY SCHOOLS.<sup>1</sup>

Industry employs skilled help as follows:

- (1) Tradesmen with a definite amount of preliminary trade training.
- (2) Workmen engaged in a specific task, e. g., tending a machine.
- (3) Apprentices without definite preliminary training.

Minister Debruck, in 1907, declared in the Prussian Chamber of Deputies that he had ordered an experimental investigation in a number of Government districts which covered over 1,475 concerns, with 311,394 workmen. Of these, 114,272 (36.7 per cent) were skilled workmen; 46,666 (40.80 per cent) belonged to trade unions; 26,036 had "picked up" the trade, and 67,606 (59.76 per cent) had in a factory school.

<sup>1</sup> For assistance in this translation the author is indebted to Rev. O. S. Baumester, New Milford, Conn.

It is clear that in the early days industry did not sufficiently provide for special training of those employed. Industry soon recognized its duty in this direction, however, and was gradually forced to take this matter of trade training in hand, because the trade itself could not produce sufficient skilled help.

The minister goes on to say:

Even though these figures can not be accepted as absolutely conclusive, yet one thing can be ascertained, namely, that the number of skilled workmen with systematic training in the factory is ever increasing, while the number of workmen otherwise trained is continually decreasing.

The minister maintains that further inquiries will verify these statements. Investigations in the chambers of commerce have led to similar results.

Despite these facts, the complaints of tradesmasters that they have to carry the expense of the apprentice system do not cease. In Eisenach, 1907, at the German "Innungs und Handwerkstag," it was said by Delegate Euler: "The result of trained workmanship is to add later on to the strength of a greater industry." Delegate Trimborn declared: "It is a fact that in the long run industry gains from the strength of skilled labor."

In the resolutions drawn up in this assembly, it was further stated: "Handicrafts are no longer willing to educate apprentices for greater industry at their own expense."

It may be that the education of apprentices in factories is only by degrees becoming systematized and unobjectionable; but the earnest endeavor of industry to supply help in the best possible manner must be acknowledged. This is particularly true of the machine industry. The machine industry affiliated with that of bridge, ship, and wagon building demands such workmen as the following: (1) Locksmiths (iron and metal founders); (2) lathe turners; (3) molders (iron and metal); (4) smiths (iron and copper); (5) tinmiths; (6) joiners (building, furniture, pattern makers); (7) painters; (8) carpenters and saddlers (these to a minor extent), holsterers.

During an inquiry (1907) held in the Rhein-Westphalian Chambers of Commerce, under the auspices of the Rhein-Westphalian industry, there were represented 898 companies, comprising 322,068 workmen and 10,678 apprentices. There were 310 companies without apprentices, the 10,678 apprentices belonging to 588 concerns, with 245,699 workmen.

They were divided as follows:

*Workmen and apprentices in certain trades.*

Trades.	Number.	Apprentices.	Per cent.
Locksmiths.....	11,592	2,438	21.0
Lathe turners.....	5,868	1,113	19.0
Smiths.....	5,166	342	6.6
Molders.....	4,866	473	10.1
Joiners.....	1,855	232	12.5
Masons.....	361	27	7.4
Weavers, etc.....	1,576	165	10.4
Tinmiths.....	584	82	14.0
File makers.....	682	40	5.9
Wire makers.....	424	13	3.1
Painters.....	109	30	27.5
Printers.....	276	11	4.0
Compositors.....	627	117	18.7
Bookbinders.....	522	66	10.7
Others.....	283	14	5.0
	211,118	652	.20

In 22 concerns the apprentices passed examinations, and in 14 others they made models for the concerns.

After the investigation the machine industry had 41,785 workmen and 4,245 apprentices in the field, located in 168 concerns. Of these, 109 were youths; the remaining

148 concerns with 38,977 workmen and 4,245 apprentices were reported as follows (10 concerns had no apprentices employed):

*Workmen and apprentices in 148 concerns.*

Trades.	Number.	Apprentices.	Per cent.
Locksmiths.....	5,076	1,327	26.1
Lathe turners.....	3,255	785	24.1
Smiths.....	3,205	148	4.6
Molders.....	2,030	199	9.8
Joiners.....	740	134	18.1
Engine fitters.....	187	32	17.1
Tinsmiths.....	5	2	40.0
Others.....	24,279	1,622	6.7

Out of 148 concerns five passed apprentice examinations at the close of their apprenticeship and five others upon completing certain articles of workmanship. The distribution of apprentices among the various industries is reported as follows: The machine industry comprises the highest relative and absolute number of apprentices, consisting of 10.15 per cent of the sum total of workmen; and, if we include concerns not employing apprentices at all, it comprises 10.89 per cent of all labor employed. The percentage of other industries ranges, respectively: Metal industry, 7.24 per cent; farming industry, 6.73 per cent; book publishing industry, 6.19 per cent; wire and small iron industry, 3.95 per cent; forging and rolling industry, 3.4 per cent; steel and bridge building industry, 2.7 per cent; chemistry, 2.56 per cent; stone, gravel, etc., 1.56 per cent; textiles, 1.38 per cent; leather industry, 0.56 per cent; lumber, 0.30 per cent; mining industry, 0.30 per cent.

Many apprentices are also employed in the optical industry. The course generally for locksmiths in 352 concerns is 3 years. The course for lathe turners in 102 concerns is 4 years, 2 to 4 years for smiths, for molders 3 to 5 years, and the same for joiners. Figures for the industry as a whole correspond to those of the machine industry.

According to the report, 535 concerns out of 588 paid their apprentices during the full apprenticeship. The others, however, did not pay for the first year. The machine industry paid a nominal sum from the very start. The amounts paid per day were: General industry—for the first year, 80 pfennigs; second year, 1 mark 20 pfennigs; third year, 1.55 marks; fourth year, 1.65 marks. Machine industry—for the first year, 70 pfennigs; second year, 1 mark; for the third year, 1.25; and the fourth year, 1.65.

**TRAINING IN GERMAN MACHINE FACTORIES.**

The result of an inquiry made in 18 large German machine factories affords the following information:

All these factories have had a systematized course of artisan training for 9 years or more, 13 factories for 15 years or more, and several since their establishment of 60 years or more.

Almost all the factories direct the course of training to that of locksmiths, lathe turners, formers, and patternmakers. Many others, in correspondence to the special kind of wares produced by them, have a course for toolmakers, coppersmiths, joiners, mechanics, electricians, machinists, saddlers, varnishers, etc.

The total number of apprentices in 17 factories was 2,550. The time of apprenticeship in all the factories is four years. In five concerns for certain branches, e. g., for molders, the time is only three years.

With one exception, none of the firms demanded tuition. All the factories pay their apprentices a salary, which ordinarily amounts to 60 pfennigs per day for the first year, 83 pfennigs for the second year, 1.06 marks for the third year, and 1.35



marks for the fourth year. Eleven firms reward their apprentices who are further advanced in their training by what is known as "Akkordarbeit" (bonus); ten give premiums, usually paid at the end of the course.

The practical training of apprentices in 7 factories is conducted in the various departments under the supervision of experienced hands, e. g., the foremen, bosses, etc.; 12 factories have a special department where they train their help and where the help learn the different trades or parts of same. Five firms have special apprentice departments in which the apprentices are retained for two years as a rule, in order to complete the remainder of their training in the respective departments.

Three of these machine factories require examinations, six the completion of some piece of work; the examinations are compiled by the different workmen, engineers, or foremen, or by some representatives of the concern, together with members of the chamber of commerce. The results of the examinations in seven firms ranged from "Good" to "Very good."

*The theoretical training.*—Twelve firms require that the applicant receive continuation schooling in the city schools, for which two firms pay the tuition. Only 6 firms have their own continuation schools; 1 firm has a school in view, with a five years' course, consisting of 12 hours each week; two have a four years' course of 6 to 12 hours weekly; 3 have a three years' course of 3 to 12 hours weekly.

The expense of this artisan education is borne by a special arrangement in each case. Two factories maintain that the expenses are defrayed from the products of the pupils. The cost annually per capita amounts to about 150 marks, and in two firms from 100 to 281 marks for one pupil.

The results of this training are recorded by most concerns as most satisfactory. Most of the apprentices remain with the firm that furnished the education, or, if they depart, return after a while. Some attain to higher positions, or establish themselves in their own business, or go abroad permanently. The efficiency of the workmen, according to 11 firms, is much greater because of this training, particularly in respect to quickness and accuracy. In contrast, only four firms have the same to say of apprentices that are untrained. The latter were less useful than the former, and if they did become at all useful it was only after some "breaking in."

This inquiry, just as that made in the Rhein-Westphalian Chamber of Commerce, establishes the fact that the machine industry has long concerned itself in a systematized and extensive way with the trade training of apprentices. The machine industry affords its apprentices a theoretical training as well as a practical education in its field of labor. Efforts have also been made to afford the apprentices the advantages of being allowed to take the statutory examination of the Government. Tuition for apprenticeship is not demanded in any case, but, on the other hand, the apprentice receives a remuneration.

An answer to each of the three following questions is important:

(1) Does the machine industry in itself afford a training for economic purposes?  
(2) Do the practical and theoretical training prove efficacious? If not how may it be perfected?

(3) Shall the industry afford the advantage of an official examination or shall it content itself with its own examination?

(4) The machine industry must strive not only to cover its own need of locksmiths and lathe turners, etc., but must for its own interest provide the purchasers of its products with similarly valuable men, because these recipients of the goods very often are in a position to further the training of men. From the inquiry made by the Rhein-Westphalian Chamber of Commerce it is evident that the machine industry of that Province employs 8,518 locksmiths, lathe turners, etc., as compared with 8,946 employed by other industries. We may infer that the other industries educate a great number of their own men, and yet there remains a great need of these laborers for trades that are not enumerated among the regular industries, such as institutions



of learning, electrical and Government jobs, resorts of various kinds, etc. This demand is not to be underestimated. It would not be an exaggeration to assert that the machine industry ought to educate 50 per cent more men than it really needs.

(2) Research has again made it clear that the practical education of apprentices in the machine factories is good and second to no other kind of training. The theoretical training is imparted in the public continuation schools to a great extent and to a smaller extent in the factory apprentice school. The instruction given in the continuation school, however, leads to the fact that because of various hindrances (distance, which makes it impossible for pupils to attend regularly and because they are already tired out by the day's exertions) instruction can in most part only be imparted in the evening. The factory apprentice schools have their instruction during working hours, i. e., in the forenoon, to serve their own purpose. Besides, these schools can better adapt themselves to their own needs and as a greater part of the instructions can be given by their own officials the cost of maintenance is not so great. State recognition of such trade schools can be easily obtained. It is therefore most commendable to encourage all factories that have a sufficient number of employees to establish their own schools.

(3) Because of the wonderful results attained, the machine industry ought to be given legal authority to some extent over the official examinations. The industry should strive to have the examinations regulated by a mixed commission of State and trade officials.

The practical education of apprentices through the trade shops without systematic instruction serves only as an aid in grave necessity. The apprentices in such cases are estranged too much from the proper atmosphere of the trade and do not develop the correct and necessary acquaintance they should have with the work.

Where, however, the opportunities for sufficient training do not prevail, such apprenticeships ought to be recognized, with the condition attached that the pupils shall in the latter years be given such opportunities to exercise their faculties in the practical manner required, and that they take the examinations under the same circumstances as others.

The machine industry should strive to train its men in the most varied manner possible, in every phase of the business. On this account the apprentices of one handicraft should be intermingled with those of another, in order to familiarize themselves with all conditions. It seems to be plausible that for the first two years locksmiths and lathe turners should have about the same course, and only be entered upon their special field during the last two years. Besides, the locksmiths and lathe turners ought to be given insight into that work of regular smiths, and vice versa.

The workshops of the State railroad and those of private concerns ought to adopt the following regulations:

(1) Length of course in the principal trade, four years. With a four-years' course completed, the machine industry ought to maintain a supply of apprentices:

- (a) Locksmiths and lathe turning apprentices should comprise 20 per cent of the workmen mentioned.
- (b) Formers, molders, smiths, model and cabinet makers, comprising 12 to 14 per cent.

(2) Railroad and Government shops have the same obligations.

(3) The training of apprentices must be conducted in a systematic manner. In order to attain this the apprentices should be kept within groups under technical supervision, conducted by able teachers, who can show them the way into practical activity. This should be done during the first two years. Only after this, during the latter part of the course, shall they be allowed to enter into a regular department. The theoretical instruction should be given in the continuation school during the first three years every day for two hours in the forenoon. In the fourth year the instruction may be deferred until evening.

It is earnestly to be desired that all the apprentices of the machine industry take the official examination for apprentices.

(4) The machine industry shall not exact any tuition, but rather give from the very start a small remuneration, to be increased as the time goes on.

(5) The practical training of apprentices in unsystematized apprentice instruction can only be regarded as a makeshift by the machine industry. During the last year the apprentices should be employed in the productive shops of the concern, and the examination should take place according to the conditions laid down for trade and industries.

The following is a typical factory continuation school:

*Machine factory, Augsburg-Nurnberg.*

- (1) Private apprentice, continuation school.
- (2) Established with governmental approval, 1890.
- (3) Supervision: Royal school magistracy, local board of education, directors of the factory.
- (4) Teachers have passed governmental examinations.
- (5) Curriculum similar to that of the city continuation schools, with drafting more extensively taught. Attendance at school the whole year round.
- (6) Pupils freed from attendance at public continuation schools.
- (7) At the close of the third year, release examination, given by the royal school commissioner (royal school inspector, representative of city, factory, and teacher).
- (8) Schedule of studies:

Studies.	Hours per week.			
	First year.	Second year.	Third year.	Fourth year.
German language.....	2	2	2	
Business and material knowledge.....	2	1	1	1
Legal knowledge.....		1	1	
Natural science, mechanics, physics.....			1	
Arithmetic.....	2	2	1	
Drawing.....	6	6	5½	6
Bookkeeping.....			1	
Total.....	12	12	12	7½

- (9) Semiannual reports.
- (10) Annual excursions of school. Visitation of museums.
- (11) Expenses, 1907-8, 12,885 marks for 135 apprentices in continuation school and 16 apprentices separate from these in actual instruction workshops in the factory.

## BULLETIN OF THE BUREAU OF EDUCATION.

[NOTE.—With the exceptions indicated, the documents named below will be sent free of charge upon application to the Commissioner of Education, Washington, D. C. Those marked with an asterisk (\*) are no longer available for free distribution, but may be had of the Superintendent of Documents, Government Printing Office, Washington, D. C., upon payment of the price stated. Remittances should be made in coin, currency, or money order. Stamps are not accepted. Documents marked with a dagger (†) are out of print.]

### 1906.

- †No. 1. Education bill of 1906 for England and Wales as it passed the House of Commons. Anna T. Smith.
- \*No. 2. German views of American education, with particular reference to industrial development. William N. Hailmann. 10 cts.
- \*No. 3. State school systems: Legislation and judicial decisions relating to public education, Oct. 1, 1904, to Oct. 1, 1906. Edward C. Elliott. 15 cts.

### 1907.

- †No. 1. The continuation school in the United States. Arthur J. Jones.
- \*No. 2. Agricultural education, including nature study and school gardens. James R. Jewell. 15 cts.
- †No. 3. The auxiliary schools of Germany. Six lectures by B. Maennel.
- †No. 4. The elimination of pupils from school. Edward L. Thorndike.

### 1908.

- †No. 1. On the training of persons to teach agriculture in the public schools. Liberty H. Bailey.
- \*No. 2. List of publications of the United States Bureau of Education, 1867-1907. 10 cts.
- \*No. 3. Bibliography of education for 1907. James Ingersoll Wyer, Jr., and Martha L. Phelps. 10 cts.
- †No. 4. Music education in the United States: schools and departments of music. Arthur L. Manchester.
- \*No. 5. Education in Formosa. Julian H. Arnold. 10 cts.
- \*No. 6. The apprenticeship system in its relation to industrial education. Carroll D. Wright. 15 cts.
- \*No. 7. State school systems: II. Legislation and judicial decisions relating to public education, Oct. 1, 1906, to Oct. 1, 1908. Edward C. Elliott. 30 cts.
- †No. 8. Statistics of State universities and other institutions of higher education partially supported by the State, 1907-8.

### 1909.

- \*No. 1. Facilities for study and research in the offices of the United States Government in Washington. Arthur T. Hadley. 10 cts.
- No. 2. Admission of Chinese students to American colleges. John Fryer.
- \*No. 3. Daily meals of school children. Caroline L. Hunt. 10 cts.
- †No. 4. The teaching staff of secondary schools in the United States; amount of education, length of experience, salaries. Edward L. Thorndike.
- No. 5. Statistics of public, society, and school libraries in 1908.
- \*No. 6. Instruction in the fine and manual arts in the United States. A statistical monograph. Henry T. Bailey. 15 cts.
- No. 7. Index to the Reports of the Commissioner of Education, 1907-1907.
- \*No. 8. A teacher's professional library. Classified list of 100 titles. 5 cts.
- \*No. 9. Bibliography of education for 1908-9. 10 cts.
- No. 10. Education for efficiency in railroad service. J. Shirley Eaton.
- \*No. 11. Statistics of State universities and other institutions of higher education partially supported by the State, 1908-9. 5 cts.

### 1910.

- †No. 1. The movement for reform in the teaching of religion in the public schools of Saxony. Arley B. Shaw.
- No. 2. State school systems: III. Legislation and judicial decisions relating to public education, Oct. 1, 1908, to Oct. 1, 1909. Edward C. Elliott.
- †No. 3. List of publications of the United States Bureau of Education, 1867-1910.
- \*No. 4. The biological stations of Europe. Charles A. Kofoid. 50 cts.
- \*No. 5. American schoolhouses. Fletcher B. Dresslar. 75 cts.
- †No. 6. Statistics of State universities and other institutions of higher education partially supported by the State, 1909-10.

## 1911.

- \*No. 1. Bibliography of science teaching. 5 cts.
- \*No. 2. Opportunities for graduate study in agriculture in the United States. A. C. Monahan.
- \*No. 3. Agencies for the improvement of teachers in service. William C. Ruediger. 15 cts.
- \*No. 4. Report of the commission appointed to study the system of education in the public schools of Baltimore. 10 cts.
- \*No. 5. Age and grade census of schools and colleges. George D. Strayer. 10 cts.
- †No. 6. Graduate work in mathematics in universities and in other institutions of like grade in the United States.
- \*No. 7. Undergraduate work in mathematics in colleges and universities. 5 cts.
- \*No. 8. Examinations in mathematics, other than those set by the teacher for his own classes. 5 cts.
- \*No. 9. Mathematics in the technological schools of collegiate grade in the United States.
- †No. 10. Bibliography of education for 1909-10.
- †No. 11. Bibliography of child study for the years 1908-9.
- \*No. 12. Training of teachers of elementary and secondary mathematics. 5 cts.
- \*No. 13. Mathematics in the elementary schools of the United States. 15 cts.
- \*No. 14. Provision for exceptional children in the public schools. J. H. Van Sickle, Lightner Witmer, and Leonard P. Ayres. 10 cts.
- \*No. 15. Educational system of China as recently reconstructed. Harry E. King. 15 cts.
- \*No. 16. Mathematics in the public and private secondary schools of the United States. 15 cts.
- †No. 17. List of publications of the United States Bureau of Education, October, 1911.
- \*No. 18. Teachers' certificates issued under general State laws and regulations. Harlan Updegraff. 20 cts.
- No. 19. Statistics of State universities and other institutions of higher education partially supported by the State, 1910-11.

## 1912.

- \*No. 1. A course of study for the preparation of rural-school teachers. Fred Mutchler and W. J. Craig. 5 cts.
- \*No. 2. Mathematics at West Point and Annapolis. 5 cts.
- \*No. 3. Report of committee on uniform records and reports. 5 cts.
- \*No. 4. Mathematics in technical secondary schools in the United States. 5 cts.
- \*No. 5. A study of expenses of city school systems. Harlan Updegraff. 10 cts.
- \*No. 6. Agricultural education in secondary schools. 10 cts.
- \*No. 7. Educational status of nursing. M. Adelaide Nutting. 10 cts.
- \*No. 8. Peace day. Fannie Fern Andrews. [Later publication, 1913, No. 12.] 5 cts.
- \*No. 9. Country schools for city boys. William S. Myers. 10 cts.
- \*No. 10. Bibliography of education in agriculture and home economics. 10 cts.
- †No. 11. Current educational topics, No. I.
- \*No. 12. Dutch schools of New Netherland and colonial New York. William H. Kilpatrick.
- \*No. 13. Influences tending to improve the work of the teacher of mathematics. 5 cts.
- \*No. 14. Report of the American commissioners of the international commission on the teaching of mathematics. 10 cts.
- †No. 15. Current educational topics, No. II.
- \*No. 16. The reorganized school playground. Henry S. Curtis. 5 cts.
- \*No. 17. The Montessori system of education. Anna T. Smith. 5 cts.
- \*No. 18. Teaching language through agriculture and domestic science. M. A. Lelper. 5 cts.
- \*No. 19. Professional distribution of college and university graduates. Bailey B. Burritt. 10 cts.
- \*No. 20. Readjustment of a rural high school to the needs of the community. H. A. Brown. 10 cts.
- \*No. 21. Urban and rural common-school statistics. Harlan Updegraff and William R. Hood. 5 cts.
- No. 22. Public and private high schools.
- No. 23. Special collections in libraries in the United States. W. Dawson Johnston and Isadore O. Mudge.
- \*No. 24. Current educational topics, No. III. 5 cts.
- †No. 25. List of publications of the United States Bureau of Education, 1912.
- †No. 26. Bibliography of child study for the years 1910-1911.
- \*No. 27. History of public-school education in Arkansas. Stephen B. Weeks.
- \*No. 28. Cultivating school grounds in Wake County, N. C. Zebulon Judd. 5 cts.
- No. 29. Bibliography of the teaching of mathematics, 1900-1912. David Eugene Smith and Charles Goldsber.
- No. 30. Latin-American universities and special schools. Edgar E. Brandon.
- No. 31. Educational directory, 1912.
- No. 32. Bibliography of exceptional children and their education. Arthur MacDonald.
- †No. 33. Statistics of State universities and other institutions of higher education partially supported by the State, 1912.

## 1913.

- No. 1. Monthly record of current educational publications, January, 1913.
- \*No. 2. Training courses for rural teachers. A. C. Monahan and R. H. Wright. 5 cts.
- \*No. 3. The teaching of modern languages in the United States. Charles H. Handachin. 15 cts.
- \*No. 4. Present standards of higher education in the United States. George E. MacLean. 20 cts.
- \*No. 5. Monthly record of current educational publications. February, 1913. 5 cts.

- \*No. 6. Agricultural instruction in high schools. C. H. Robison and F. B. Jenks. 10 cts.
  - \*No. 7. College entrance requirements. Clarence D. Kingsley. 15 cts.
  - \*No. 8. The status of rural education in the United States. A. C. Monahan. 15 cts.
  - \*No. 9. Consular reports on continuation schools in Prussia. 5 cts.
  - \*No. 10. Monthly record of current educational publications, March, 1913. 5 cts.
  - \*No. 11. Monthly record of current educational publications, April, 1913. 5 cts.
  - \*No. 12. The promotion of peace. Fannie Fern Andrews. 10 cts.
  - \*No. 13. Standards and tests for measuring the efficiency of schools or systems of schools. Report of the committee of the National Council of Education. George D. Strayer, chairman. 5 cts.
  - No. 14. Agricultural instruction in secondary schools.
  - \*No. 15. Monthly record of current educational publications, May, 1913. 5 cts.
  - \*No. 16. Bibliography of medical inspection and health supervision. 15 cts.
  - \*No. 17. A trade school for girls. A preliminary investigation in a typical manufacturing city, Worcester, Mass. 10 cts.
  - \*No. 18. The fifteenth international congress on hygiene and demography. Fletcher B. Dresslar. 10 cts.
  - \*No. 19. German industrial education and its lessons for the United States. Holmes Beckwith. 15 cts.
  - †No. 20. Illiteracy in the United States.
  - \*No. 21. Monthly record of current educational publications, June, 1913.
  - \*No. 22. Bibliography of industrial, vocational, and trade education. 10 cts.
  - \*No. 23. The Georgia club at the State Normal School, Athens, Ga., for the study of rural sociology. E. C. Branson. 10 cts.
  - \*No. 24. A comparison of public education in Germany and in the United States. Georg Kerschesteiner. 5 cts.
  - \*No. 25. Industrial education in Columbus, Ga. Roland B. Daniel. 5 cts.
  - \*No. 26. Good roads arbor day. Susan B. Sipe. 10 cts.
  - \*No. 27. Prison schools. A. C. Hill. 10 cts.
  - \*No. 28. Expressions on education by American statesmen and publicists. 5 cts.
  - \*No. 29. Accredited secondary schools in the United States. Kendrick C. Babcock. 10 cts.
  - \*No. 30. Education in the South. 10 cts.
  - \*No. 31. Special features in city school systems. 10 cts.
  - No. 32. Educational survey of Montgomery County, Md.
  - †No. 33. Monthly record of current educational publications, September, 1913.
  - \*No. 34. Pension systems in Great Britain. Raymond W. Gies. 10 cts.
  - \*No. 35. A list of books suited to a high-school library. 15 cts.
  - \*No. 36. Report on the work of the Bureau of Education for the natives of Alaska, 1911-12. 10 cts.
  - No. 37. Monthly record of current educational publications, October, 1913.
  - †No. 38. Economy of time in education.
  - No. 39. Elementary industrial school of Cleveland, Ohio. W. N. Hallmann.
  - \*No. 40. The reorganized school playground. Henry S. Curtis. 10 cts.
  - No. 41. The reorganization of secondary education.
  - No. 42. An experimental rural school at Winthrop College. H. E. Browne.
  - \*No. 43. Agriculture and rural-life day; material for its observance. Eugene C. Brooks. 10 cts.
  - \*No. 44. Organized health work in schools. E. B. Hoag. 10 cts.
  - No. 45. Monthly record of current educational publications, November, 1913.
  - \*No. 46. Educational directory, 1913. 15 cts.
  - \*No. 47. Teaching material in Government publications. F. K. Noyes. 10 cts.
  - \*No. 48. School hygiene. W. Carson Ryan, Jr. 15 cts.
  - No. 49. The Farragut School, a Tennessee country-life high school. A. C. Monahan and Adams Phillips.
  - No. 50. The Fitchburg plan of cooperative industrial education. M. R. McAnn.
  - †No. 51. Education of the immigrant.
  - \*No. 52. Sanitary schoolhouses. Legal requirements in Indiana and Ohio. 5 cts.
  - No. 53. Monthly record of current educational publications, December, 1913.
  - No. 54. Consular reports on industrial education in Germany.
  - No. 55. Legislation and judicial decisions relating to education, October 1, 1909, to October 1, 1912. James C. Boykin and William R. Hood.
  - \*No. 56. Some suggestive features of the Swiss school system. William Knox Tate. 25 cts.
  - No. 57. Elementary education in England, with special reference to London, Liverpool, and Manchester. I. L. Kandel.
  - No. 58. Educational system of rural Denmark. Harold W. Focht.
  - No. 59. Bibliography of education for 1910-11.
  - No. 60. Statistics of State universities and other institutions of higher education partially supported by the State, 1912-13.
- 1914.
- \*No. 1. Monthly record of current educational publications, January, 1914. 5 cts.
  - No. 2. Compulsory school attendance.
  - No. 3. Monthly record of current educational publications, February, 1914.
  - No. 4. The school and the start in life. Meyer Bloomfield.



## IV

## BULLETIN OF THE BUREAU OF EDUCATION.

- No. 5. The folk high schools of Denmark. L. L. Friend.  
No. 6. Kindergartens in the United States.  
No. 7. Monthly record of current educational publications, March, 1914.  
No. 8. The Massachusetts home-project plan of vocational agricultural education. R. W. Stinson.  
No. 9. Monthly record of current educational publications, April, 1914.  
No. 10. Physical growth and school progress. B. T. Baldwin.  
No. 11. Monthly record of current educational publications, May, 1914.  
No. 12. Rural schoolhouses and grounds. E. B. Dresslar.  
No. 13. Present status of drawing and art in the elementary and secondary schools of the United States.  
Royal D. Farnum.  
No. 14. Vocational guidance.  
No. 15. Monthly record of current educational publications. Index.  
No. 16. The tangible rewards of teaching. James C. Boykin and Roberta King.  
No. 17. Sanitary survey of the schools of Orange County, Va. Roy K. Flannagan.  
No. 18. The public school system of Gary, Ind. William F. Burris.  
No. 19. University extension in the United States. Louis E. Reier.  
No. 20. The rural school and hookworm disease. J. A. Ferrell.  
No. 21. Monthly record of current educational publications, September, 1914.  
No. 22. The Danish folk high schools. H. W. Foght.  
No. 23. Some trade schools in Europe. Frank L. Glynn.

O